THE

REVENUE REGISTER.

No. 5.] MADRAS:—MONDAY, MAY 15, 1876. [Vol. X.

A MANUAL OF THE CUDDAPAH DISTRICT—III.

Chapter V, *Revenue History.*—When Munro first took charge of the District he hoped to collect from it a revenue of twenty lakhs. This was however more than even he could obtain, notwithstanding the heaviness of his assessments. The first year, owing to the lateness of the season, he made a village assessment; but in subsequent years he adopted the ryotwary settlement, making however the headman of the village responsible for defaulting or absconding ryots. To enable the ryots to cultivate their lands Munro was forced to grant them *tuckavi*, or advance, and that to an extent which shows only too plainly how impoverished was the district, and how little able to bear the heavy assessments imposed on it. This was still further proved by the fact that the land was unsaleable. This state of affairs continued till 1872-73, when the rates per acre, which in some instances rose as high as Rupees 35, were reduced to a maximum rate of Rupees 12. Although at first sight this seems like a terrible blow to the revenue, yet there is reason to hope that, while so much more favourable to the ryots, Government will ultimately share in the increased prosperity of the people. Munro's survey and settlement lasted five years; and though some mistakes may be detected in it, it was on the whole wonderfully correct. Although during his administration of seven years Munro met with two exceptionally bad seasons, yet his régime must be looked on as having been most successful, and when he retired in 1807, Government was not slow to acknowledge his unremitting industry and unparalleled success in developing the revenues of the country. Indeed, in 1808 the Board of Revenue wrote as follows: "The example we believe to be unparalleled in the Revenue annals of this Presidency, if so extensive a tract of territory, reduced from confusion to order, and a mass of revenue, amounting to no less than 1,19,90,419 star pagodas being regularly, and at length readily, collected with a remission of only one fanam, twenty-two cash per cent." About the time of the departure of Munro there was a discussion as to the settlement of the country, and three modes of settlement were proposed: First, the Zemindary system, which obtains in Bengal; secondly, the Village Rent system; and thirdly, the Ryotwary system. Munro himself approved of the latter, but Government differed from him on this point, and rented out each village on a three years' lease to a middle-man. This system, as might have been expected, broke down altogether, and, though another similar

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settlement for ten years was tried, it met with no better success, and was finally abandoned in 1821 in favour of the Ryotwary system, which is the one best suited to the country, and which has never since been changed. We see that Mr. Gribble does not think that the lease system ever had a fair trial in Cuddapah on account of the very high rates at which the land was assessed. In 1820 Sir Thomas Munro became Governor of Madras, and on the expiration of the ten years' lease, he introduced the Ryotwary system in Cuddapah, at the same time making great reductions in the rates of assessment. Since that time there has been little or nothing to record of the Revenue history of the district. The railway has been opened and has given a healthy stimulus to trade; but Cuddapah still suffers from an insufficient and precarious supply of water. The chapter concludes with a list of the Collectors of the District, and a short account of Butcha Row, who for thirty-seven years was Head Sheristadar of the district, and the invaluable assistant of each succeeding Collector.

Chapter VI, *Poligars.*—This chapter is, Mr. Gribble tells us, "taken almost verbatim from a report of Colonel Munro's." It gives a short account of 49 different families, of whom a great number are now extinct.

The next chapter, Chapter VII, the first one in Part III, concerns the Criminal tribes. It commences with a list of them as given by Munro, divided into six classes. Of these many have now disappeared, and of the survivors the Yanadies, Woddars, Erkalas and Sugalies are the most hardened. Cuddapah seems to have been frequently troubled by organized gangs of robbers, who did not hesitate to defy the police and attack the public treasury. So numerous were these gangs, that we find that "in 1857 gangs of 200 armed men were reported from Kadiri, from Sidhout 40, from Raychoty 100, and from the Palkonda Hills 50 or 60. Mr. Gribble remarks that these bands gave much trouble to the police, and that it was only after years of miniature campaigning that they were caught. To exemplify this Mr. Gribble quotes some interesting passages from the Police Administration Report; of these we propose to reproduce at least one.

"The latest example of a Cuddapah docoi is to be found so short a time ago as 1873. One Namal Singadoo had been for years the terror of the villages on the boundary of the Bellary District and the taluk of Kadiri in Cuddapah, because he was so feared; he was, however, respected and protected. Though he was frequently recognized as the leader in daring robberies, he could never be caught. The ryot who, when Singadoo was a few miles distant, would be most clamorous regarding his losses, would protect and hide if he (Singadoo) came to his house. It is a melancholy fact that the lower classes are imbued with the idea, and not without reason, that the Government is less able to protect them than a bold criminal is powerful to harm them. Singadoo's last exploit was, however, the last feather on the camel's back. He became dissatisfied with a policeman who had inquired after him, and who had crossed his path too often, and on meeting him one day he revenged himself by cutting off his head in broad daylight. The hue and cry then became too hot for him. He took refuge in the hills between the Kadiri taluk and the Bellary district, and the police on both sides were in search of him. He was at last traced to a village, but remained there for some time with impunity, for, though a man weak in bodily strength, he was known to be desperate and always armed. But even great minds have their weaknesses, and his was—drink. A Police Inspector, Sheikh Madar Sahib by name, managed to lay an ambush for him. After some days' acquaintance, an accomplice in disguise supplied him one evening with drink and then turned the conversation on bodily strength; and, having lifted a heavy stone, he made a wager with Singadoo that he could not do the

same. The wager was accepted, and Singadoo laid aside his sword and his pistol and stooped to lift the stone. Alas! for chivalry! when his back was bent, the ambush rushed in, overpowered him, and carried him, tied to a cot, to the nearest police station. From thence he was taken to the Bellary Sessions Court; and, being sentenced for the murder of two men who had informed against him previously, paid the just penalty of his many crimes. History repeats itself, and the fall of Singadoo could, were he not a murderer, almost find a parallel in the Mahabharata, where the invincible Karna is slain by Ardsuna's spear whilst he is endeavouring to lift his chariot wheel out of a mud hole."

We further learn from Mr. Gribble that murder is all too rife on the slightest provocation. Some of these murders are due to family quarrels, some to conjugal infidelity, and in one sad instance, a little boy thirteen years of age was murdered by his uncle, because he had not, in the opinion of that relative, treated him with sufficient respect. Besides these horrible crimes we find that perjury, forgery, and extortion are common offences; nor is torture a rare thing in this interesting district!! We are not surprised at the conclusion to which Mr. Gribble comes after detailing all this moral depravity and lawlessness, "The Criminal law is taken advantage of by the village officials to extort money by the suppression of crimes actually committed, and to bring false charges against innocent men who have incurred the enmity of a wealthy or influential inhabitant. *The rough and ready justice of Sir Thomas Munro was far more efficacious and far more popular than the present criminal law.*

Chapter VIII, *Judicial.*—This chapter seems to follow the one on the Criminal classes by a very just and proper arrangement. We find that there is an increase in almost every kind of crime. Yet we would fain hope that this apparent increase is chiefly due to the vigilance of the police and the consequent detection of many crimes that formerly passed unnoticed. There is however we are told, a decrease in dacoities and gang robberies which were formerly so rife in the district. The police appear to be as efficient as they are elsewhere, but the proportion of superior officers seems hardly adequate to the supervision of so large a tract of country. To the account of the Police succeed statistics regarding the Courts of Justice, and a list of Judges of the Zillah and District Court.

Chapter IX, *Climate and Health.*—This part of the subject has been glanced at in this first part of our notice of the Manual. Suffice it to say that in this chapter we find registers of heat and cold kept at Cuddapah and Madanapally, accounts of the three dispensaries at Cuddapah, Madanapally and Proddatoor, statements of births and deaths, classification of diseases, remarks on the vaccine department, and a list of indigenous medicines, all of which are now officinal.

Chapter X, *Agriculture.*—Under this head we find accounts of the principal products of the District, namely, cotton, indigo, and sugar-cane. Cotton appears to have always been one of the staple industries of the country, for in 1803 the first Commercial Resident, Mr. Greenhill, wrote to Munro telling him it was difficult to induce the weavers to work for Government, as under the former Governments they had found it so difficult to obtain remuneration. Little by little the reluctance of the ryots was overcome, and now cotton to the value of about 40 lakhs is produced yearly in the district. Indigo is also generally grown, though the cultivation is, we are told, fluctuating. It has an advantage over some other kinds of cultivation, namely, that it will grow on both wet and dry lands. The cultivation of indigo ought to be very profitable, for we are told that the out-turn is about 2 or 2½ maunds an acre, and that it is worth from Rupees 40 to Rupees 52 a maund, while

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the rent of the land is about Rupees 4 an acre. Strangely and, as it seems to us, unfortunately this manufacture is greatly on the decline in this district, what little trade there is in this article being in the hands of the natives, who adulterate the valuable dye with mud. Sugar-cane grows chiefly in the sub-division, and meets with a ready sale, being in request all over the southern part of the Presidency.

Chapter XI, *Revenue.*—In this chapter we see the amount of cultivable land, the land actually under cultivation, the rates of assessment, the various sources of revenue. Mr. Gribble notices the harm done to the country and the Revenue by the large number of Inams that exist. They are not only direct losses, but indirectly they exercise a baneful influence, because the cultivators being able to sub-rent, or at least to find employment on these lands, are nearly independent of the Government lands, and will not work them unless they can get them on very favourable terms. To quote Mr. Gribble's own words, he says, "I have no hesitation in saying that the best of the energies of the cultivating classes are bestowed upon the Inam lands. It is upon them that they expend their capital and their labour, and yet there are lands that ought to yield a revenue (by the present valuation) of eight lakhs of rupees lying waste, and the story is still the same. Land has no saleable value, and the ryots live from hand to mouth. There would therefore appear to be some grounds for supposing that the only way to bring the waste lands under cultivation is to reduce the assessment so as to procure a saleable value for each acre even of dry land. And it must be remembered that by bringing this waste land under cultivation, the Government Revenue will be doubly benefited. The increase of production will be a source of profit to the Government as well as the ryot." The succeeding Chapters on Inams, Local Funds, Public Works, Forest and Hill ranges and the Missions, are of little more than local interest, and we must refrain from entering into any detailed notice of them; but the chapter on Popular Superstitions is too interesting to be passed over in total silence. The first two given concern the celebrated Munro, and we reproduce them in Mr. Gribble's own words.

"As an example of how the mythology of India is formed, I may quote the following two anecdotes of Colonel Munro; *ante* at page 107, I have mentioned a legend regarding a golden garland which Munro is supposed to have seen a short time before his death. Since writing this legend I have heard an amplification of it from a Brahmin, who assures me that his edition of the story is currently believed. It is this: when Rama conquered Ravana in Ceylon and rescued Seeta, he despatched the news of victory to this country, where he had lived so long in exile. On hearing it the Governor stretched across the gorge of Vaimpally a wreath of golden flowers. From that day to this, though the original wreath has long since disappeared, its semblance appears, shortly before their death, to those whom the gods love. As Munro passed through this gorge shortly before his death, he saw the wreath and pointed it out to his native followers. They could not see it, but told him the legend connected with it. The people say that Munro was delighted that this vision should have been revealed to him, and that he accordingly halted at an adjacent pagoda, remained there for two days, and *then offered sacrifices and presents to the swamy.* Again at Kadiri there is a large pagoda at which there is an annual feast, to which a large number of pilgrims resort. When Munro first took charge of the Ceded Districts he resumed all the inam lands preparatory to an investigation of their titles. At Kadiri he expressed his intention of confiscating all the lands attached to the pagoda. Hence the whole of the Brahmins were suffering great sorrow. One day Munro went out shooting. During a beat a tiger came across him. Munro

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instead of shooting, was struck with terror and fell down; the tiger sprang upon him, and after some time bolted off, leaving Munro uninjured. Munro was picked up insensible and carried home in a palankeen. After two days of sickness he sent for the chief Brahmin of the place and asked him how it could be that he should have lost his courage so suddenly, and yet should have remained uninjured. The Brahmin told him that this tiger was in reality the swamy of the pagoda, who had embraced this opportunity of making Munro's acquaintance in order to give him a gentle hint that he should be as merciful to the pagoda inams as he had been to him. Munro was convinced by this interpretation, and at once confirmed to the pagoda its old endowments.

In this last story there is one palpable falsehood. Munro was no sportsman, and never went out shooting. The most he ever indulged in was throwing a stone at a pariah dog when waiting for his guest to come to breakfast (Gleig's life of Sir Thomas Munro, page 299). When stories with such endings as these can be told of a man whose life is like a glass house, and whose memory is not more than fifty years old, what wonder is there that the whole of Indian history is wrapped in fable? To those who know what Munro was, nothing could be so incredible as that he made sacrifices in a pagoda, or believed that he had seen an incarnation of a Hindoo swamy; and yet here are the people among whom he lived for seven years who believe this. What truth then can be collected from the legends and histories of rulers who lived hundreds of years ago?"

Another pretty story connected with a branch of the Cheyair occurs at page 285.

"Where a branch of this river flows past the town of Kalcudda,* in the Voilpaud taluk, there is a remarkable fall. The stream disappears in the ground and emerges from a hole a hundred feet lower, after which it winds away through steep rocks. The people tell a strange legend in connection with this hole. In ancient times there was a Rajah at Sidhout (derived from *Sidha Vatam*—the hermit's banian tree), who had a beautiful and only daughter. When the time came for her to be married she was found to be pregnant. Thereupon the king being very angry, ordered her head to be cut off. She, however, urged that she had committed no sin, but that the sun god had appeared to her in a dream disguised as the hermit, the patron saint of the place, and had married her. To prove the truth of this story she offered to walk forty miles with a toddy pot on her head containing a live cobra. The offer was accepted, and she walked 40 miles, crossing the Palkonda hills, until she came to the site of the present town of Kalcudda. There she placed the pot on the ground, and as the cobra was found in it, and she was still unhurt, the truth of her story became apparent. She took up her abode in this town, and after some time gave birth to twin sons. When their education was completed the mother went to the hole in the ground where the river disappears, and jumping in she "kissed the feet of the god," *i. e.*, died. Her boys, however, grew up and were called the Suriakumarloo—sons of the sun. They ruled the country for many years, and built a road over the pass which their mother had toiled through before. Whatever doubt may attach to this story, the pass through which the trunk road passes over the Palkonda hills near Goolcheroovoo, 16 miles from Cuddapah, and near which the remains of an old native road are plainly visible, is still popularly known as the Suriakumarloo Kanama."

Chapter XVIII, and last, deals with weights and measures, which are very variable, differing not only from other districts, but those of the different taluks differing amongst themselves.

We have now finished our very brief and imperfect review of Mr. Gribble's Manual. We are sure that it will be a useful book of reference for those working in that part of the country, and it is at the same time sufficiently interesting to repay perusal by those whose lot has fallen in cooler places than the Cuddapah District.

* కల్లు Kalloo = Toddy, ఘటు Ghuta = pot.

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CIRCULAR ORDERS OF THE BOARD OF REVENUE.

No. II.

STANDING No. 351-2.

BELTS AND BADGES.

Proceedings of the Board of Revenue, dated 28th March 1876, *No.* 852.

PARAGRAPH 1 of Standing Circular Order No. IV of 1875 should be read as if the words "of Collectors and Divisional Officers" were inserted after the word "Duffadars."

2. Lace edging is not necessary for the belts of Taluk Duffadars, and it has not been usual to supply it hitherto.

No. III.

STANDING No. 253-3.

RULES FOR COASTING STEAMERS.

Proceedings of the Board of Revenue, dated 4th April 1876, *No.* 917.

G.O., dated 23rd February 1876, No. 266, Revenue Department.

G.O., dated 27th March 1876, No. 425, Revenue Department.

UNDER instructions from Government, Collectors are requested to substitute the following amended Rules for Rules 6 and 12 of the "Rules for the issue, &c., of General Passes for Coasting Steam Vessels under Section 156 of the Consolidated Customs Act, and for entering and clearing such Vessels" circulated with Board's Standing Order No. VIII of 1871, No. 253-2 :—

RULE 6.—When any coasting vessel shall sail for *both* Foreign and British Indian ports, the Commander shall deliver an account duly signed in duplicate, as prescribed in Rule 4, of all goods (to be expressed in detail) destined for any *foreign* port, and he shall receive back the original account, duly dated and signed by the Officer in charge of the Custom-house, *before leaving* the port. A separate account of all goods destined for British Indian ports shall be delivered by the Local Agent of the vessel as prescribed by Rule 5.

Provided that Rules 4 and 6 shall not apply to coasting steam vessels carrying Her Majesty's mails, but the procedure prescribed in Rule 5 shall be followed in respect of such vessels for whatever ports bound, and the necessary clearance when the coasting steamer is bound for a foreign as well as a British port shall be granted on application prior to her departure from the port.

RULE 12.—The discharge of cargo from any coasting steam vessel may be commenced immediately after the anchor is dropped at any British Indian port, and boats may be sent off to receive cargo before delivering the accounts prescribed by the above Rule. Goods and passengers arriving by any coasting steam vessel may be landed under the above rules at any hour of the day (6 A.M. to 6 P.M.) not excepting Sundays and holidays, subject, however, to the regulated fee being paid to the subordinates of the Customs Department, in accordance with the prescribed rules, in consideration of extra labor entailed by working overtime or on Sundays and holidays under the orders of the Officer in charge of the Custom-house.

HIGH COURT—ALLAHABAD.

(Before a Full Bench.)

TURNER, OFFG. C. J., PEARSON, SPANKIE, AND OLDFIELD, JJ.

Act XIX of 1873, *Sec.* 241, *Cl.* (i)—*Revenue—Pattidar—Suit for Contribution—Jurisdiction—Civil Court—Revenue Court.*

The question in the case was whether the plaintiff, a pattidar who had paid a sum on account of a demand for Government revenue, should sue to recover from the defendants, his co-pattidars, the balance in excess of his own quota in the Civil or in the Revenue Court.

HELD (Spankie, J., dissenting) *that the Civil Courts were competent to entertain suits of the nature.*

PER Spankie, J., *contra.*

Ram Dial and others *v.* Gulab Singh and others.*

THE plaintiff, a pattidar who had paid a sum on account of a demand for Government revenue, not merely in respect of his own share, but also in respect of the shares of the defendants, his co-pattidars, sued to recover the sum paid in excess of his own quota. The suit was instituted in the Court of the Munsiff of Chibramau. The Munsiff dismissed the suit, deeming it to be a claim connected with or arising out of the collection of revenue, and that he was therefore prohibited by Section 241 of Act XIX of 1873

* Special Appeal No. 293 of 1875, from a decree of the Judge of Farrikhabad, dated the 16th January 1875, reversing a decree of the Munsiff of Chibramau, dated the 24th August 1874.

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from entertaining it. On appeal by the plaintiff the Judge held that there being no special provision for the trial of such a suit by the Revenue Court, the Civil Court had jurisdiction, and remanded it for disposal on the merits.

The defendants appealed to the High Court on the ground that the suit was not cognizable by the Civil Courts.

The Court (Turner, Offg. C. J., and Spankie, J.) referred to a Full Bench the question whether the plaintiff should have sued in the Civil or in the Revenue Court.

The *Senior Government Pleader* (Lala *Juala Parshad*) and Munshi *Hanuman Parshad* for appellants.

Pandit *Ajudhia Nath* and Pandit *Bishambar Nath* for respondents.

Turner, Offg. C. J., and Pearson and Oldfield, JJ., concurred in the following opinion:—

We are of opinion that the Civil Courts are competent to entertain claims of this nature, and that the Munsiff is in error in regarding it as a claim connected with or arising out of the collection of revenue within the meaning of that term in Section 241, Act XIX of 1873. Looking to the context, it appears to us that that provision of the law may have been intended to apply to wrongs arising out of or connected with the collection of land revenue, such as suits against the revenue officers for the illegal exaction of revenue or for the illegal issue of process. In such cases, the claim arises out of a wrong done in the collection or connected with the collection. In the case before us the plaintiff seeks no remedy for a wrong done to him in the collection of revenue or arising thereout, because, assuming the revenue to have been due, he suffered no wrong in its collection, and certainly no wrong at the hands of the defendants; he sues because he has been compelled to pay a debt for which they were all jointly liable, a payment which gives him the right to call on them for contribution.

It strengthens the view we have taken that, as pointed out by the Judge, neither in the sections of this Act nor in those of Act XVIII which declare what powers may be exercised by the several revenue authorities do we find any mention made of suits of this nature.

Spankie, J.—Until the passing of Act XIX of 1873 I am willing to admit that a suit of the nature of a claim for contribution, as this is, would be heard in the Civil Courts. But it appears to me that Act XIX, which is one to consolidate and amend the law relating to land revenue and the jurisdiction of the revenue officers, aims at keeping in the hands of those officers the settlement of every dispute connected with the collection of revenue, whether such disputes arise between the revenue-payers themselves, or between the Government officers and the revenue-payers.

The question that we have to determine is whether or not the suit involves a dispute regarding one of those matters included in Section 241 of the Act, over which the section declares, in so many words, the Civil Courts shall exercise no jurisdiction.

Now Cl.(*i*) of the section provides for claims connected with or arising out of the collection of revenue (other than claims under Section 189), or of any process enforced on account of an arrear of revenue. The exception relates to proceedings taken under Ch. V of the Act to enforce the recovery of any arrears of revenue against a person. He may pay the amount under protest to the officer taking the proceedings, and upon such payment the proceedings shall be stayed, and the person against whom such proceedings were taken may sue the Government for the amount so paid in any Civil Court in the district where such proceedings were taken. Here, possibly, the party who brings the suit may contest altogether any liability to pay revenue to Government, or that only a portion of what was taken was due from him, because the latter part of the section allows him to give evidence of the account which he alleges to be due from him, notwithstanding the provisions of Section 149. This section declares that a statement of account certified by the tahsildar shall be conclusive evidence of the existence of the arrear, of its amount, and of the person who is the defaulter.

Cl. (*i*) appears to provide generally for any dispute being a claim connected with or arising out of the collection of revenue, or any process enforced on account of an arrear of revenue as in this case, in which the tahsildar enforced the joint and several responsibility of the proprietors declared by Section 146, by calling upon the plaintiff to pay Rupees 1,293, which sum was not the proportionate share due by himself but included also the quota due by 38 other persons.

This is not a case of a lambardar suing under Act XVIII of 1873 for arrears of revenue payable through him due by the co-shares whom he represents. It is the case of a pattidar who is known or supposed to be solvent, who is made to pay what other pattidars owe, or refuse to pay contumaciously or from design, or by the reason of some dispute in the patti. The revenue officer has done no wrong to the plaintiff in getting the arrears out of him. It is not pretended that he has made the plaintiff pay more on his own account than he is bound to pay. He has simply enforced against him the common liability of the pattidars, for which he also made himself responsible.

It is contended that the plaintiff does not seek a remedy for wrong done to him in the

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collection of revenue, because, assuming the revenue to be due, he suffered no wrong in the collection, and none at the hands of the defendants. But it is, I think, apparent that whatever he has suffered is owing to the conduct of the defendants, and the enforced payment by him of revenue due by them has given to him the right of forcing them in return by suit to re-imburse him. In the course of such a suit it would not be sufficient for the plaintiff to produce the revenue officer's receipt for Rupees 1,293. He would have to show what was the amount due by each of the pattidars, and they would have to account for not having paid their quota. It may surely be assumed that existing disputes connected with or arising out of the collection of the revenue (very large and wide words) would be disclosed in the suit disputed, which, in my opinion, the legislature intended should be heard and determined by the revenue authorities.

Such a claim as the one before us seems to me to arise out of the collection of the revenue and the enforcement of the plaintiff's liability to pay the arrear due by his co-sharers, and it is, I think, included in Cl. (*i*) of the section. If this be so, then, in the last words of the section, "in all the above cases, jurisdiction shall rest with the revenue authorities only."

Thus the first words of the section bar the jurisdiction of the Civil Courts in any of the matters included in the section, and its last words declare that the revenue authorities only shall have jurisdiction. If the claim is one that will come under Cl. (*i*) of the Section, the Civil Courts can take no cognizance of it.

But the Judge finds that there is no special provision for the hearing of this particular class of suit by the revenue authorities, and that the prohibition entered in the last clause of section 241 applies only to those cases for which there is a special provision. I do not understand whether the Judge means that a suit of this nature is not mentioned in Section 241, or whether he means expressly that no power is given to revenue officers elsewhere in the Act to hear suits of this nature.

As to the first point, some confusion is caused by regarding this case as a suit. It is sufficient that the dispute between plaintiff and defendants should be one connected with or arising out of the collection of the revenue. Being one of that description, it would be one of "the matters" over which the Civil Court could not, and the revenue authorities alone could exercise jurisdiction. As to the second point, the jurisdiction being with the revenue authorities, those authorities must be one or more of the officers named in Section 207, the Commissioner, Collector, Assistant Collector, Officer in charge of a Settlement or Assistant Settlement Officer, or a tahsildar. Any one of those officers can summon persons before him, if he considers their attendance necessary for the purpose of any investigation, suit, or other business before him (Section 208), so it is not only suits that may be tried under the Act. The Act recites the powers of Collectors and Assistant Collectors generally and also particularly, and Collectors, in addition to their own powers, may exercise the powers of Assistant Collectors, and Assistant Collectors in charge of a sub-division exercise the same powers that a Collector could if there was no sub-division subject to the control of the Collector. It is true that there is no particular mention of claims under Cl. (*i*), Section 241, outside that section. But Section 241 is a portion of Ch. VII which, amongst other matters, treats of the powers of Collectors and others. Section 241 expressly gives to those officers as revenue authorities alone the power of dealing with the matters contained in it. And where this is the case, it seems to me to be idle, in this particular reference, to raise any difficulty regarding the revenue officer who is to determine any one of the matters contained in the section. If this is one of those matters referred to in Cl. (*i*), Section 241, no want of clearer specification of the powers of the different revenue authorities, no omission of the class of case outside the section, and no ambiguity or defect in the Act, can give the Civil Courts the jurisdiction which the opening words of the section expressly bar.

I would answer that this case should be heard by the revenue authorities.—*The Indian Law Reports*, Part 1, Allahabad Series, Page 26.

HER MAJESTY'S PRIVY COUNCIL.

[MADRAS CASE.]

Impartible zemindary — Succession — Written authority to adopt—Genuineness of authority contested.

A, the holder of an impartible zemindary, died without legitimate male issue, but he left a widow, B, then enciente. *C, a half-brother of A, was declared to be the undivided brother and the person who, according to the ordinary law of succession, was entitled to succeed to the zemindary on failure of B begetting a male child. B subsequently adopted a son, and alleged that her husband had executed in her favour a written authority to adopt a son in the event of her begetting a female child. The*

questions for decision were whether the written authority to adopt was in fact executed by A, and if not, whether the adoption is not nevertheless valid according to the law prevailing in the Madras Presidency as one made by a widow without express authority from her husband, but with sufficient sanction and consent on the part of her husband's relatives.

HELD, *that the alleged written authority was one which bore the genuine signature of A; and as containing a disposition which he was likely to make; that it was a valid authority to adopt executed by A.*

Judgment of the Lords of the Judicial Committee of the Privy Council, on the appeal of *Sri Virada Pratapa* v. *Sri Brozo Kishoro Patta Deo*, from the High Court of Judicature at Madras, delivered 24th March* 1876.†

Present.

SIR JAMES W. COLVILE.
SIR BARNES PEACOCK.
SIR MONTAGUE E. SMITH.

RAJAH ADIKONDA DEO, the then holder of an impartible zemindary in the district of Ganjam, which in these proceedings is called sometimes Chinnakimidy, and sometimes Pratapagheri, died on the 23rd November 1868. He left no legitimate male issue, but a widow, then *enciente* whom it will be convenient to designate by her title of Mahadevi. He had, however, several natural sons, one of whom, Ramakrishna Deo, contrived, on the death of his father, to be invested by some of the retainers with the "Sadhi," and asserted a claim to the zemindary on the ground that he was in fact legitimate, and had been designated by Adikonda as his successor in an urzi signed by him on the 19th November, and forwarded to the Collector. This claim has since been found to be groundless, and may be treated as no longer existent.

The appellant Raghunadha, who was a half-brother of the deceased Zemindar, must now be taken to have been an undivided brother, and the person who, according to the ordinary law of succession, was entitled to the zemindary on the death of Adikonda without a legitimate son, either procreated or adopted.

It is necessary, in order to explain some parts of the subsequent history of the case, to observe that the question of succession, when it first arose, was further complicated by the fact that the zemindary, though permanently settled, was one of those as to which it was then conceived that, owing to the omission to issue a permanent Sunnad, the Government of Fort St. George had retained the right of nominating on the death of each successive holder his successor. The confirmation by this Board of the decision of the High Court of Madras in the Marangapury case (see Law Reports, 1, Indian Appeals, p. 282) has since established that there was no legal foundation for this pretention on the part of Government; and it must now be taken to be settled law that the title to the zemindary is to be determined by the ordinary law of succession in like cases.

On the day after that of the death of Adikonda, *i. e.*, on the 24th November 1868, the Mahadevi addressed an urzi to the Collector (p. 143), in which she stated the death of her husband; that the family was composed of women and children; that she had then none legally entitled to the taluk, but was three months gone with child; and prayed to be intrusted with the care of this taluk. In this document she made no mention of an authority to adopt.

It is shown, however, beyond all question, by the Collector's letter of the 2nd December 1868, which is recited in the proceedings of the Board of Revenue at p. 105 of the record, that before that date he had received a second urzi or letter from the Mahadevi, in which she had alleged that it was her husband's express wish that, in the event of her having not a son, but a daughter, she should adopt a son. And if the exhibit R at p. 64 of the record be that second urzi, or a true copy of it, there can be no doubt that as early as the 26th November 1868, the Mahadevi had asserted publicly that her husband had, on the 20th of that month, executed in her favour a written authority to adopt a son in the event which afterwards happened. The confusion which seems to have taken place in the Civil Court, with respect to the proof of exhibit R, has given rise to a controversy on its authenticity which will be afterwards considered. But whatever may have been the precise contents of the second urzi, it is unquestionable that as early as the 11th December, the Mahadevi presented a formal petition to the Government of Fort St. George, in which she stated that Adikonda before his death executed and gave to her a patrica or will containing words to this effect: "You have now conceived; if you bring forth a male child, he will be a Rajah to the taluk; in case of a female child, you are authorized to select a good child for the seat;" and that in several subsequent petitions and applications she persistently put forward and relied upon a written authority to adopt executed by her husband. One of these, bearing date the 18th March 1869, stated the date of the instrument

* This judgment was posted in London on the 31st March.—ED. *M. J.*

† "Republished from XI, *Madras Jurist*, p. 188."—ED. *R. R.*

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to be the 20th November 1868; and in most of them she claimed to be heiress to the zemindary in default of a legitimate son, natural or adopted, of her husband. Raghunadha seems on his side to have been also asserting his claim before the Government and the Revenue authorities.

The action taken by the Government of Fort St. George was as follows:—

The Board of Revenue, on the report of the Collector, had on the 7th January 1869, expressed its opinion that Raghunadha had the best claim to the zemindary, provided the Mahadevi did not give birth to a son; but that if she should have a son that son ought to succeed. Thereupon Government, on the 1st March, ruled that a posthumous son would be entitled to the inheritance, and directed the Collector to take such measures as he might think fit to ascertain whether the widow was really pregnant, and to verify the sex of the child when born. To the widow's repeated applications it made answer that the claim to the zemindary was under consideration. On the 11th July 1869, the Mahadevi was delivered of a daughter, and on the 17th September in that year Government, in the exercise of its supposed power, and on the recommendation of the Collector, supported by the Board of Revenue, resolved (p. 143) to recognize Raghunadha, who had been reported by the Collector to be the undivided brother of the deceased Zemindar, as the successor to the Chinnakimidy estate; thereby over-ruling the Mahadevi's claim to be heiress to her husband; and ignoring her asserted right of adoption.

Pending these proceedings there had been litigation between the Mahadevi and Raghunadha touching the right to a certificate, under Act XXVII of 1860, for the collection of the debts due to the deceased Zemindar. This was determined in favour of the Mahadevi by the Civil Judge on the 31st March 1869. But on the 11th February 1870, his decision was reversed by the High Court, and the certificate granted to Raghunadha, apparently on the general ground that the claim of an undivided brother was preferable to that of a widow, and that there was no satisfactory proof of division.

For some short time after the determination of the Government in his favour, Raghunadha and the widow seem to have lived together in amity. She retained, apparently with his consent, the custody of the keys of the goutaghoros, or treasuries, in which the jewels, cash and other valuables that had been left by the late Zemindar were kept; but allowed Raghunadha to receive thereout both jewels and cash for the purposes of his installation, which took place on the 1st February 1870. He again was in correspondence with the Collector in November, touching the villages to be assigned to her for her maintenance (pp. 115 and 116); and speaks of their friendly relations, although in one of his letters he complains that Haribondhu Sumanto and two or three more wicked persons were "making intrigues and giving evil advice." But this state of amity, if it ever sincerely existed, was of brief duration. In the course of 1870 the parties again plunged into active litigation. In his suit numbered 9 of that year, Raghunadha sought to recover from the Mahadevi the jewels and cash in the gontaghoros, greatly exaggerating their amount and value, as property to which he was entitled as Zemindar. In her suit, No. 12 of 1870, she sought to recover from him the particular jewels and cash which had passed from her to him on the occasion of his installation, alleging that he had received them by way of loan on a promise to restore the former, and repay the latter. Her suit was ultimately dismissed on the ground that she had failed to establish any such contract. In the other suit the material issues were whether Raghunadha was the undivided brother of Adikonda, or separate in estate from him; whether the Mahadevi, as widow of Adikonda, was entitled by right of succession, to the money and jewels left by him; and if not, whether Adikonda had made to her at the time of his death a gift of them that was valid against Raghunadha.

In this suit, the Civil Judge found that Raghunadha, the plaintiff, was the undivided brother of Adikonda, and that Adikonda, at the time of his death, did not make a gift to his wife of any part of the property then in dispute. He found, however, in the first instance, upon the second issue, that the Mahadevi, as widow of Adikonda, was entitled to all the money and jewels left by him; proceeding, apparently, on the ground that, inasmuch as each succeeding Zemindar must be taken to have held the estate by virtue of a new grant from Government, he held it as self-acquired property; and consequently, that, on his death, his personal assets would pass to his widow, to the exclusion of his brother. Before, however, a final decree had been drawn up in this suit, the Marungapury case was decided by the High Court of Madras; and the Judge thereupon granted a review of his decision. On that review, he found that the Mahadevi, as widow of the late Zemindar, was not entitled to the money or jewels left by him; and, finally, made a decree in favour of Rahghunadha, but for an amount much less than that claimed by him. There was no appeal against the decrees in these suits. They decided as between the Mahadevi and Raghunadha that the status of the family was that of non-division; and that Raghunadha, being in default of male issue, of Adikonda entitled to the estate, was entitled to the jewels and cash as appurtenant thereto. They have, however,

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little bearing on the questions now to be determined; although some of the depositions taken in them have been relied upon as affecting the credibility of the testimony given by the same witnesses in the present suit.

Pending these two suits of 1870, and on the 20th November in that year, the Mahadevi adopted the present respondent. He was the son of the Zemindar of Peddakimidy, who is admitted to be a sapinda of Adikonda Deo, though separate in estate from him; both families being, as shown by the pedigree at p. 19, derived from a common ancestor, Purushottama Deo. Nor is the validity of the adoption impeached, except on the ground that the Mahadevi had not sufficient authority to make it.

On the 15th December 1870, the respondent, by his adoptive mother and guardian, commenced his suit for the recovery from Raghunadha, of the zemindary and of all the property appurtenant thereto, with mesne profits. The defendant, Raghunadha, originally set up, by way of defence, that his title as Zemindar appointed by Government could not be questioned. But it is now admitted that, since the decision of the Marungapury case, this defence cannot prevail; and that the only questions to be decided are, whether the exhibit Q, which is propounded as the written authority to adopt, of the 20th November 1868, was, in fact, executed by Adikonda Deo, and, if not, whether the adoption is not, nevertheless, valid according to the law that prevails in the Presidency of Madras, as one made by a widow, without express authority from her husband, but with sufficient sanction and consent on the part of her husband's relatives.

The Civil Judge decided both these questions against the respondent. He came to the conclusion, both from external and internal evidence, that the document was a forgery; he was also of opinion that the requisite assent to an adoption, in the absence of an authority from the husband, was not given, and consequently that the adoption was not valid as against the defendant. The High Court inclined to the opinion that Q was, in fact, executed by Adikonda, but did not go very much into the evidence for or against the document; being of opinion that, even if no express authority was given by Adikonda, the adoption by the widow, being made with the consent of one of his sapindas (the father of the child adopted), was valid by the law of Madras.

Their lordships propose to consider, first, whether Q was, in fact, executed by Adikonda.

It has been strongly urged upon them that the judgments of the two Indian Courts upon this question, though not concurrent, are not directly conflicting, the High Court having omitted to find that the document is genuine, or fully to consider the evidence concerning it; that in this state of things, their lordships cannot safely over-rule the dicision upon a question depending mainly on the credibility of conflicting witnesses, of a Judge of great local experience, who saw and examined those witnesses, and has expressed his conclusion in a judgment that demonstrates with what remarkable care and industry he tried the cause.

Their lordships are by no means insensible to the force of the general proposition involved in this argument. That force, however, seems to them to be somewhat diminished by particular circumstances in this case. They consider that the voluminous judgment of the Civil Judge deserves the credit due to a most painstaking endeavour to arrive at the truth in a difficult case. But its excessive elaboration tends to impair its value by defeating the proper object of a judgment, which is to support, by the most cogent reasons that suggest themselves, the final conclusions at which the Judge has conscientiously arrived. This document records the fluctuations of the Judge's mind from day to day in the course of an exceptionally long trial; the effect, often temporary upon him of a particular piece of evidence or argument of counsel: it subjects every witness to criticism more or less unfavourable; and from this mass of often conflicting statements, it is not easy for a Court of Appeal to extract the pricise grounds on which the final conclusion rests.

Again, the Counsel for the respondent have strongly insisted on the objection to the authority of this judgment, which they founded upon the observations of the learned Judge in paragraph 62, &c. (p. 376). It must be admitted that the passage is ambiguous. If it means only that where a case has been manifestly proved to be false (as, *e.g.*, if Q had been shown to be written on a stamp paper purchased after Adikonda's death), it is unnecessary to weigh general probabilities, the observation is a mere truism; since it is obviously idle to inquire whether it was likely a man should do that which it has been demonstrated he never did. On the other hand, if it imports that the Judge refused to weigh the probabilities of the case, because he believed one set of witnesses rather than the other, it would support the objection taken, viz., that in forming his belief he had excluded from his consideration that which ought to have entered into it. Their lordships, however, upon a review of the whole judgment, are of opinion that, in whatever sense the learned Judge made the observation in question, he did not, in fact, fail to consider the probabilities of the case. Whether he gave due weight to them will be afterwards considered.

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A more substantial objection to the judgment is that it does not dispose of the question as it was presented by the parties. The learned Judge was not content to find that Q was a forgery. By a careful examination and comparison of it with admitted signatures of Adikonda, he satisfied himself that the signature purporting to be that of Adikonda was itself forged. Yet the appellant (p. 255) had admitted that that signature, and the saukhu and chakrum (the emblems on it) were of his brother's hand-writing; and the case made by him and his witnesses was that the forgery was effected by filling up, after Adikonda's death, a blank paper, which had these genuine marks and signature upon it. Their lordships agree with the Judges of the High Court in thinking that little weight ought to be given to a comparison of Oorya hand-writing by an European Judge, however skilled and experienced, when opposed to the admissions of those who dispute the document. They feel bound, therefore, to assume, and that has been almost admitted in the argument addressed to them on the part of the appellant, that the signature of Adikonda upon Q is of his hand-writing. It is obvious, however, that the erroneous conviction of the Civil Judge to the contrary may greatly have biassed his estimate of the credibility of the plaintiff's story, and may have prevented him from duly weighing the improbabilities of that told by the defendant, which he did not adopt. The genuineness, therefore, of the signature of Adikonda, is a circumstance which materially detracts from the general value and authority of the judgment of the Civil Judge; and their lordships cannot but feel that they have to determine the question before them upon the evidence taken in the cause, without the assistance which they generally find in similar cases in the judgment of one or the other of the Indian Courts.

That there is in this case a strong antecedent probability that Adikonda did authorize an adoption is incontestable. It does not rest upon the mere presumption that on his death-bed he would desire to perform that general duty of imperfect obligation which prompts a childless Hindoo to supply the want of natural male issue by adoption. It is shown that the brothers, though legally undivided, were long on bad terms with each other. The strife began, as appears by the Collector's letter at page 106, on the death of their father in 1835 when there was a dispute as to their succession to the zemindary, Raghunadha claiming it as the eldest son of the then Mahadevi, though younger in years than Adikonda, who was born of a wife of inferior rank. This controversy was determined by the then Government, in the exercise of its assumed power, in favour of Adikonda. The strife, however, was embittered by subsequent quarrels between the brothers, and by the desperate attempt of Raghunadha as late as 1852 to oust his brother by proving him to be illegitimate. In these circumstances, whatever may have been the precise relation of the brothers during the later years of their joint lives, there is a high degree of probability that Adikonda would desire to retain, by all means in his power, the zemindary in his own line; and would be unwilling to expose the wife, to whom he was attached, to the chance of falling from the rank which even as adoptive mother of a reigning Rajah she would possess, to that of a widow entitled only to be maintained, however honourably, by her brother-in-law.

There being then this antecedent probability that he would execute some such document as that which bears his admitted signature, what is the direct evidence to show that he really did or did not execute it. The witnesses, whose names are upon it, are Sumanto the Treasurer, Siva Purohit, now the Dewan of Raghunadha, but formerly the servant in the like capacity, first of Adikonda, and afterwards of the Mahadevi, Balaji, the scribe, and Damapattojosi the Purohit. Of these, the two former are the only subscribing witnesses in the strict sense of the term; Balaji signing only as the writer of the instrument; and Damapattojosi, though named as a witness, not having signed at all. Again, the only one of the four who deposes to the execution of the instrument is Sumanto. His story (page 215) is that on the 20th November (*i.e.*, on a day between which and the day of the Rajah's death two clear days intervened), at about 3 prohoros of the day (*i.e.* about 3 P.M.), the Rajah sent the Peon Narayani to call in any respectable people (Bollolokho) that might be in the outer hall (Sodoro); that the Peon returned with Siva Purohit, Damapattojosi, Bodhrosanto, Bhagirathipani and Balaji; two other persons, viz., Boyiduorahu Gouro Bondhari, being already in the room when the order was given; that Balaji was then sent out to bring paper, pen and ink; that on his return he wrote the authority to adopt under the Rajah's dictation, making first a draft and afterwards a fair copy; that the list of witnesses which appear in Balaji's hand-writing on it was also written at the Rajah's dictation, first in the draft and then in the fair copy; that the subscribing witnesses Siva Purohit and the witness himself then signed, Damapattojosi excusing himself, with the Rajah's consent, from signing, on the ground that he was an old man, and could not see; that Balaji also wrote his name as the writer of the document; that the Rajah himself traced the saukhu and chakrum at the top, and wrote his own signature at the bottom of the document; that they all wrote with the same pen dipped in the same ink-bottle; that it took about 2 ghadyahs (one and half hour) to com-

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plete the transaction; and that afterwards and when about the same space of the day remained, the witness, by order of the Rajah, took the document to the Mahadevi, who, while it was being prepared, was in "the chapel," being a room near that of the Rajah, and put it on the threshold, the door being ajar. The witness also states that nearly two ghadyahs before this, and previously to the preparation of the document, he had taken to the Mahadevi, by order of the Rajah, the keys of the Treasury House, and had said to her "The keys of the other Treasury House were given you, now keep the keys of this Treasury and all the property therein."

This witness directly contradicted by the three other persons, whose names are upon Q, Siva Purohit, Balaji, and Damapattojosi. Their testimony in this suit is to be found at pages 189, 269, and 267 of the Record. The account which they give of the fabrication of Q is the following: About ten, or at most twelve days after the death of Adikonda, Sumanto brought to Balaji a paper, having upon it Adikonda's signature, and the sankhu and chakrum, but otherwise blank, together with a draft, and told him to fair-copy the draft upon the blank paper. Balaji, according to his own account at first refused, but afterwards obeyed. The result was Q, as it now stands, with the exception of the signatures of the subscribing witnesses. The paper in that state was given by Balaji to Sumanto, who took it to Siva Purohit for his signature. He swears that he refused to sign it, and denies that the signature upon it which purports to be his is of his hand-writing. The value of that denial will be presently considered. The paper was subsequently (*i.e*, about fourteen days after Adikonda's death) taken by Sumanto to Damapattojosi, who also swears he refused to sign it as witness.

The question is which of these two stories is to be believed. The last their lordships think must be taken with the qualification that, notwithstanding the denial of Siva Purohit, the disputed signature is of his hand-writing. That it is so was found by the Civil Judge, and his finding does not depend on mere comparison of hand-writing. Its correctness seems to their lordships to be placed beyond doubt by the exhibit LL page 3, in which, writing to Iswara Pattro, as late as the 10th July 1869, he speaks of the document executed by the late Rajah to the Mahadevi, and urges his correspondent to use his best endeavours to get from Government a recognition of it. It is clear, therefore, that if Q be a forgery, Siva Purohit was at one time a consenting party to that forgery. The Civil Judge has undoubtedly recorded a most unfavourable opinion of Sumanto. He says of him: "H. S. lied and prevaricated grievously. I could not believe anything one bit the more readily from the fact that he asserted it" (Judgment, paragraph 54, page 320). Yet the credibility of this witness, however small, is nevertheless superior to that of Siva Purobit and Balaji. Notwithstanding his demeanour he may have told what is substantially a true story; whereas the others must either have been guilty of perjury in this suit, or have been conscious actors in an antecedent forgery. Damapattojosi is not open to this imputation, and is apparently a more respectable witness. All that the Judge says against him is, that "he protested too much." But there is a high degree of improbability in his story.

The *primâ facie* improbability that there should exist any blank paper with the genuine signature of the deceased Rajah upon it, is no doubt removed by the evidence of Binayaka (p. 263), and the production of the four blank papers similarly signed, which that witness swears he discovered eighteen months before he gave his deposition (*i.e.*, early in 1870) in the late Rajah's record box. There is, however, no proof that at the time when Q is said to have been forged any such papers had been found; and the subsequent discovery of them may have suggested the present answer to the plaintiff's case. If, however, it be assumed that the supposed forgers had but one such paper in their hands ten days after the late Rajah's death, it is obvious that such a paper was very precious; and it is inconceivable that they would have inserted Damapattojosi's name in the list of witnesses until they were assured of his willingness to sign. If, again, they had then in their hands more than one such paper, they would naturally, on Damapattojosi's refusal to join in the conspiracy, have destroyed it, and fabricated a similar instrument on which his name should not appear. The story then told by him is less probable than that told by the plaintiff's witnesses in order to account for the non-signature of it by him; for he is shown to be a person of weak sight, and not to have been in the habit of writing with a pen. All these three witnesses against the document are shown to be now more or less dependent upon the defendant; and there is little, if any, other affirmative evidence in support of the defendant's case.

On the side of the plaintiff, however, there is a considerable amount of direct testimony in confirmation of that of Sumanto.

Of the witnesses in this category who are vouched by Sumanto as present when it was prepared and executed, are Boyiduorahu, the native doctor and Gouro Bhondhari, the barber; who are said to have been with the Rajah when he sent the Peon to call in the respectable people; Narayana Bisoyi the Peon sent; and Bordhono Santo, and Bhaghirathipani,

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who were brought in with Siva Purohit, Damapattojosi and Balaji. They generally confirm Sumanto's account of the transaction. It is true that all are more or less discredited by the Civil Judge; that the barber is not relied upon even by the respondent as worthy of credit; and that the evidence of the Peon, who says he was not continuously in the room, is of little value. But the others, particularly Bordhouo Santo, who was related by marriage to Adikonda, seem to be of respectable position, are persons who were not unlikely to be present; and their statements, notwithstanding some slight discrepancies, in the main confirm Sumanto's account of the transaction. In further corroboration of the plaintiff's case his counsel rely on the evidence of the Mahadevi and of Iswara Puttro.

The latter is the vakeel, who, in 1868 and 1869, prosecuted the Mahadevi's claim before the Government at Madras. He seems to have been employed as a vakeel by Adikonda in his lifetime; and there is nothing to impeach his general respectability. His testimony is to the effect that having been sent for by the Rajah, on account of some pending suit, he was at the house after the execution of Q; and that on the next day, that is, on the 21st November, the Rajah being then in full possession of his faculties, told him that he had the day before executed in the Mahadevi's favour a written authority to adopt. This evidence does not justify the observation of the Civil Judge that "it amounts to nothing," since, if believed, it would establish a clear admission by the Rajah of his antecedent act. It is, however, open to the exception taken by Mr. Norton, viz., that it is but evidence of an oral admission, said to have been made by a deceased person, and, as such, incapable of contradiction, and open to suspicion. His presence, moreover, at the place at the time in question is not sworn to by any other witness, and is not very satisfactorily accounted for.

The evidence of the Mahadevi (p. 205) is to the effect that on the morning of the 20th November she was weeping over the Rajah, who was very ill; that he told her in the event of her not having a male child to adopt one, and promised to give a written authority for the purpose; that in the evening of that day whilst she was sitting within her room with the door a little ajar, Sumanto brought a paper and left it on the threshold, saying it was the authority to adopt; that afterwards, and when the lamp was lighted, *i.e.*, after sunset, she took the paper to the Rajah, nobody else being in the room; that he took it from her and said, "I have given you written authority—you are pregnant. You will bring forth a male child, if not you will adopt," and then returned it to her, and that she afterwards kept it in her box. She identified Q as that paper. She further deposed that the key of the goutaghoro was brought to her by Sumanto before he brought the document; and afterwards, in answer to a question not given in the record, said, "The keys and this written authority were given to me in the evening when there were two ghadies to sunset."

Of this witness the Civil Judge (p. 320) has recorded the following opinion:—"On the face of her deposition, I see no reason to think her untruthful, but rather the contrary; and yet in O. S. No. 9 of 1870 she put forward, and supported with much evidence, three assertions on important facts which have been declared false, or have been disbelieved, viz.—(1st), division between Adikonda and the defendant, it being admitted by her in this suit that they were undivided; (2nd), an examination of the treasuries showing that they contained but a small sum, with a view to reduce the amount recoverable by the plaintiff against her, if he should be successful in that suit; (3rd), the gift of the jewels and cash by Adikonda to her. And now she has put forward Q, which is certainly a forgery; she has supported it with much evidence; she has sworn that Adikonda himself, in speaking to her, acknowledged it as his; and she has contradicted the story told by all her witnesses."

Of the objection to the Mahadevi's credit, which the learned Judge founds upon Q, and the evidence given by her in support of its execution, it is enough to observe that he thereby begs the question which he had to try, viz., whether it was a forgery or a genuine instrument. He would hardly have done this if he had not previously, and by comparison of hand-writing, satisfied himself that the signature of Adikonda was itself forged. That this foregone conclusion, which must now be taken to be erroneous, must materially have affected his general estimate of the credibility of the plaintiff's witnesses is therefore shown by the passage just cited from his judgment. Nor do their lordships attach much more weight to his other objections to this lady's credit. They do not find any material contradiction between her statement in this suit and those of the other witnesses. There is undoubtedly a discrepancy as to the time when the key was delivered (as to which only Sumanto and the native doctor speak.) But that the Mahadevi, a native woman examined from behind the Purdah, should have made some confusion as to the time that elapsed between the two acts of delivery does not, in their lordships' view, materially affect her credit. Again, her contention in the former suit that her husband and the defendant were undivided brothers, may, under the circumstances, have been raised *bonâ fide*. The fact which was found against her cannot have been in her own personal knowledge, and it was one

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which before that decree was not perfectly clear. That she should have undervalued (if she did undervalue) the amount of property in the goutaghoros will surprise nobody conversant with native suits in India. On his side, Raghunadha grossly exaggerated the amount and value of that property. Again, the alleged gift of the jewels and cash to her was no doubt found by the same learned judge against her. There may have been no appeal against his decision (the adoption having then taken place), but it is obvious that the fact of that gift is again in issue in this suit, and that it was more or less determined in the other upon the view which this same Civil Judge then formed of the credibility of the plaintiff's witnesses in this suit. There is, however, one circumstance connected with that suit of 1870 which affects the credibility, not only of the Mahadevi, but of other witnesses for the plaintiff, and ought here to be considered. That circumstance is the date on which the gift was said to have taken place. The Mahadevi, in that as in the present suit, deposed that she received the key and the written authority to adopt on the same day. And this is the story now told by those of the witnesses who in their depositions in the former suit were silent on the authority to adopt. But the date assigned to the gift of the jewels throughout the suit of 1870 was "two days" before the Rajah's death, which, in common parlance, would import, and seems to have been so understood, the 21st November. The date assigned to the transaction in this suit is a date between which and that of the Rajah's death two clear days intervened, *i.e.*, the 20th November.

This circumstance would be almost fatal to the plaintiff's case as to Q, if it were possible to suppose that that case had been got up after the evidence in the jewel suit was given. But the depositions in that suit were taken in December 1870; and when it is shown beyond all doubt that the Mahadevi had at least as early as the 18th March 1869 (in her petition at p. 70), stated the date of the alleged authority to be the 20th November; that the witnesses who impeach Q which bears that date, admit it to have been in existence ten days after the Rajah's death, and say that Sumanto was the concoctor of the fraud; it is impossible to suppose that Sumanto would ever have treated the authority to adopt as executed only on the 21st. Nor, indeed, is it easy to see why the gift of the jewels should have been represented to have taken place on that day. One of the issues contested in the cause was whether Adikonda was of sufficient mental capacity to make the gift; and the nearer to the time of his death the date of the gift was laid, the greater the difficulty of showing his capacity of making it. There may have been some strange confusion in the jewel suit as to the effect of the term "two days before his death," and misapprehension as to the date to which the witnesses then meant to depose. Their lordships are unable further to explain this discrepancy; but for the reasons above given they do not think that it seriously affects the question now under consideration.

Their lordships desire next to say a few words about two documents of which much has been said in the argument before them.

The first is EE, at page 89 of the Record. Their lordships are not inclined to adopt the statement of the defendant, that he signed this security bond without a knowledge of its contents. They do not, however, attach much weight to the words "as soon as I, or my son, from my giving him in adoption, get possession of our zemindary," as evidence in favour of the genuineness of Q; for the utmost that any inference to be fairly drawn therefrom would establish is, that in January 1869, the defendant knew that the Mahadevi had asserted an authority to adopt (a circumstance which is otherwise probable); contemplated the possibility of the power being established and his son adopted under it; and was persuaded by his creditor to provide against such a contingency. Siva Purohit was at that time acting for the Mahadevi; and if Q were forged, the defendant would not then have had the knowledge which he says he subsequently acquired of the fabrication of the document. The most, then, that can be said of EE., is that it contradicts his statement that he knew nothing of an alleged authority to adopt until a later period.

The other document is R. It is dated the 26th November, and contains a distinct statement by the Mahadevi that her husband, on the 20th November, executed in her favour a written authority to adopt, to the effect of Q. It bears upon it the words (by whom written is not known), "Received 1st December evening, by hand, foul copy." The contention on the part of the defendant is that this document affords no legal proof of the contents of the second urzi, stated in the Collector's letter of the 2nd December to have been received by him from the Mahadevi; and that the terms in which he refers to that urzi are consistent with the supposition that the Mahadevi then put forward only an oral authority to adopt—Q, not having then been fabricated. What the Collector says on this point is:—"In her second (letter) she adds that it was her husband's express wish that, if she brings forth a son, such son should succeed; if a daughter, that she (the widow) should then adopt a son." These terms are not necessarily inconsistent with those of R. All that can be said of them is that they do not state affirmatively that she alleged her husband's wish to have been expressed in writing, or on a particular day.

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It is now admitted on both sides that R is not the original urzi; that it is not an official copy of it, which, as such, would be receivable as evidence; and that if grounds had been laid for proving the contents of the missing urzi by secondary evidence, R has not been shown to be a true copy of it. Each side has imputed to the other foul play in respect of this document, but neither hypothesis is supported by proof or probable in itself. The proceedings afford some grounds for thinking that the original urzi, as well as R, was produced from the collectorate, but it seems that, owing to a blunder or, as suggested, a fraud on the part of a vakeel, R was shown to the witnesses who were at first examined upon it as if it were the original, and that the original, if ever before the Court, has slipped out of the record.

It is to be regretted that when the mistake was discovered, and the contest about this document arose, the Civil Judge did not further investigate, by inquiry at the collectorate or otherwise, the history of R, and ascertain what had become of the original urzi. Either party might have called on the Judge to do this, but neither did so. It was suggested by Mr. Norton in his reply, that their lordships might now see fit to direct such an inquiry. They do not, however, think that they would be justified in thus prolonging this litigation, inasmuch as they do not consider that a knowledge of the precise terms of the second urzi is essential to the determination of the issue before them. It is no doubt true that if the second urzi were in the terms of R, the Mahadevi must have asserted the existence of a written authority to adopt bearing the same date and to the same effect as Q, before the date at which Q is said by the defendant's witnesses to have been fabricated. But this circumstance, though it would throw considerable discredit on the defendant's case, would not conclusively disprove it; because it is possible that the document so said to exist, might not have then actually come into existence. Again, if the second urzi were only in the terms of the collector's letter, it would not, as has before been observed, be inconsistent with the existence of a written authority to adopt. Their lordships will, therefore, deal with the questions before them on the assumption that the precise terms of the second urzi have not been proved, and leave the plaintiff to bear the burthen of having failed to establish that, before the 2nd December, the Mahadevi asserted that she had a written authority of a particular date; and the defendant to bear that of having failed to show affirmatively that she then asserted only a parol authority. They now proceed to consider the grave objections to the genuineness of Q, which the learned Counsel for the defendant have founded on the form and appearance of the document.

Their lordships have the original before them, and so far as they can judge, some of these objections are, to say the least, plausible. The list of witnesses in the hand-writing of the writer of the instrument is unusual. It is also unusual for the witnesses to sign before the executing party, and to write their signatures immediately above his. The form of the instrument might naturally be expected to be that of exhibit X d. (p. 77), the translation submitted to Government by the Mahadevi's vakeel with her petition of the 26th July 1869; and it has been contended on the part of the appellant that that exhibit was purposely so modified in order to avoid the suspicions which a more literal translation of Q would have engendered. Lastly, it was contended that the appearance of the document is inconsistent with the evidence which represents that all the signatures were written at the same time, and with the same pen, and the same ink; the fine signature of Balaji being written after those of the subscribing witnesses. Their lordships were certainly at first much impressed by the last objection. It is, however, to be observed that after insisting on the impossibility of all the signatures being written with the same pen, the Zillah Judge, on the 26th November 1871, (p. 311), saw fit to record that, having just had to look again at Q, he thought it quite possible, though not very likely, that with the pen that made the last "ro" of Sumanto's signature, Adikonda might write as well as his signature is written; and a good writer like Balaji might write as finely as his signature is written. Very different appearances may certainly be produced by the same pen and ink when used by different hands; and this is more likely to happen with the coarse ink that is used by the natives of India.

Again, as regards the objection founded on X d., it is to be observed that it seems to be satisfactorily answered by the Judge himself at p. 318, who finds that X d. is, in fact, the translation of a Telugu version of Q, taken down probably by a Telugu man from the mouth of Iswara Puttro, there probably being few persons at Madras who could read or translate an Oorya document like Q.

Of the list of witnesses, it is sufficient to say that it is difficult to see why it should have been inserted in Q, if it were not done by the order of the Rajah. The suggestion on the other side is that it was inserted in order to fill up the space above the Rajah's signature on the blank paper. But surely a forger would have had no difficulty in expanding the document so as to fill up the vacant space. Nor, as their lordships have already remarked, is it likely that a forger would have inserted the name of Damapattojosi in that list until he had ascertained whether that person was willing to sign.

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Upon the whole, then, their lordships dealing with this document as one which bears the genuine signature of Adikonda; and as containing a disposition which he was likely to make; and weighing the evidence and the probabilities in favour of the plaintiff's case, against the evidence and the probabilities in favour of the defendant's case, have, not without doubt or difficulty, come to the conclusion that the former so preponderates over that the latter they ought to pronounce in favour of Q as a valid written authority to adopt executed by Adikonda on the 20th November 1868.

This finding is, of course, sufficient to dispose of the present appeal; and renders it unnecessary for their lordships to consider whether, if it had been the other way, they could have affirmed the decree of the High Court upon the grounds stated in the judgment of Mr. Justice Holloway. The great importance, however, of the subject induces them to make some observations upon it.

That, according to the law prevalent in the Dravada country, which includes the district in which the Chinnakimidy Zemindary is situate, a Hindoo widow, not having her husband's express permission, may, *if duly authorized by his kindred*, adopt a son to him, is a proposition which cannot now be controverted. The law has been so settled by the decision of this Committee in the Ramnad case; and the principles and authorities upon which it rests are elaborately considered and reviewed, both in the judgment of the Committee, "12, Moore, Indian Appeals, p. 269," and in the judgment of Mr. Justice Holloway in the same case, "II, Madras H. C. R., p. 206."

The two judgments, however, though agreeing in this general conclusion, which was all that was necessary for the determination of the cause, were by no means *ad idem* on several points, and notably on the nature of the authority required.

Mr. Justice Holloway intimated an opinion that, if the requirement of consent is more than a moral precept, the assent of any one of the husband's sapindas would suffice. This Committee was far from adopting that broad proposition. It pointed out that on the question, who are the kinsmen whose assent will supply the want of a positive permission from the husband, the authorities are extremely vague; that there exists a broad distinction between cases in which the deceased husband was a member of a joint and undivided Hindoo family; and those in which, he being separated, the widow has taken his estate by right of inheritance; but that, even in the latter case, the assent of some person who stands to her in the relation of protector may be requisite. It is unnecessary to repeat at large this portion of their lordships' judgment on that occasion, which is to be found at pp. 441 to 443 of Mr. Moore's Report.

The question has since come before the "Sudr Court of Travancore" in the case reported in the *Madras Jurist** of February 1873; and before the High Court of Madras in the present case. In the Travancore case the Court, though a foreign Court not bound by the decisions of this Tribunal, in a judgment of remarkable ability and research, adopted the principles suggested by this Committee as those which should govern the determination of the question in the case of an undivided family, and ruled that the assent of certain separate dayadies of the deceased husband was not sufficient to validate an adoption by a widow, to which the husband's undivided brother and the head of the undivided family had not assented. In the present case Mr. Justice Holloway, adverting to what was said by this Committee in the Ramnad case, concerning an undivided family, observed: "whether this be so or not, it has no application to the present case, in which the property is to be held in severalty, and not in coparcenary." And he finally formularised the following propositions :—

1. The adoption by the widow, with the assent of a sapinda is a substitute for the actual begetting by a sapinda.

2. That the argument from analogy is in favour of the assent of one sapinda rather than more.

3. That his assent is not to supply a capacity for rights, but a capacity for action.

4. That proximity to the deceased with respect to rights of property is wholly beside the question, and if this were not so, the rule would be entirely defeated.

5. That in the present case that capacity has been sufficiently supplied, as in the law which this assent of sapindas has superseded, a child begotten by this assenting sapinda would have been undoubtedly legitimate.

Their lordships cannot adopt these propositions as a correct exposition of the law.

They observe in the first place that they are all more or less founded on the assumption that the law of adoption now prevalent in Madras, is a substitute for the old and obsolete practice of raising up seed to a deceased husband by actual procreation; and that the limitations, if any, upon the power to adopt are to be traced by analogy from that practice. In the Ramnad case, (12, Moore, I. A., p. 441) their lordships, after stating their general conclusion, added the following observations :—"They

* Copies of this may be had of our Publishers.—Ed. M. J.

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think that positive authority affords a foundation for the doctrine safer than any built upon speculations, touching the natural development of the Hindoo law, or upon analogies, real or supposed, between adoptions according to the Dattaca form, and the obsolete practice, with which that form of adoption co-existed, of raising up issue to the deceased husband by carnal intercourse with the widow. It may be admitted that the arguments founded on this supposed analogy are in some measure confirmed by passages in several of the ancient treatises above referred to, and in particular by the Dattaca Mimamsa of Vidya Narainsamy, the author of the Madhavyam; but as a ground for judicial decision these speculations are inadmissible, though as explanatory arguments to account for an actual practice they may be deserving of attention."

To these remarks of their predecessors their lordships adhere. They desire further to observe that it is to their minds extremely doubtful whether the supposed analogy is sufficient to support Mr. Justice Holloway's propositions in their integrity. The myth of Satyavaty referred to by Narainsamy, and most of the texts relating to the obsolete practice which are to be found collected in Colebrooke's Digest and elsewhere, all imply an authortiy external to the widow as the justification of her act, an act repugnant to the general rule of asceticism and celibacy imposed upon Hindoo widows. Most of the texts speak expressly of "the appointed" kinsman. By whom appointed? If we are to travel back beyond the Kali age, and speculate upon what then took place, we have no reasonable grounds for supposing that a Hindoo widow, desirous of raising up seed to her deceased husband, was ever at liberty to invite to her bed any sapinda, however remote, at her own discretion; and that his consent, of itself, constituted a sufficient authorization of his act.

Positive authority, then, does not do more than establish that, according to the law of Madras, which in this respect is something intermediate between the stricter law of Bengal and the wider law of Bombay, a widow, not having her husband's permission, may adopt a son to him, if duly authorized by his kindred. If it were necessary, which in this case it is not, to decide the point, their lordships would be unwilling to dissent from the principle recognized by the Travancore case, viz., that the requisite authority is, in the case of an undivided family, to be sought within that family. The joint and undivided family is the normal condition of Hindoo society. An undivided Hindoo family is ordinarily joint not only in estate, but in food and worship; therefore not only the concerns of the joint property, but whatever relates to their commensality and their religious duties and observances, must be regulated by its members, or by the manager to whom they have expressly or by implication delegated the task of regulation. The Hindoo wife upon her marriage passes into and becomes a member of that family. It is upon that family that, as a widow, she has her claim for maintenance. It is in that family that in the strict contemplation of law she ought to reside. It is in the members of that family that she must presumably find such councillors and protectors as the law makes requisite for her. There seem to be strong reasons against the conclusion that for such a purpose as that now under consideration she can at her will travel out of that undivided family, and obtain the authorization required from a separated and remote kinsman of her husband.

Mr. Justice Holloway, however, not directly determining anything adversely to the principle affirmed in the Travancore case, distinguishes the present on the ground that, although the family must be taken to be undivided, the particular property is to be held in severalty and not in coparcenary. It is not necessary for the determination of this appeal that their lordships should decide whether this distinction can be supported, and they abstain from doing so. They may, however, observe that a distinction which is founded on the nature of property seems to belong to the law of property, and to militate against the principle which Mr. Justice Holloway has himself strenuously insisted upon elsewhere (II, Madras H. C. R., p. 229), viz., that the validity of an adoption is to be determined by spiritual rather than temporal considerations; that the substitution of a son of the deceased for spiritual reasons is the essence of the thing, and the consequent devolution of property a mere accessory to it.

Their lordships desire further to observe, that even if the distinction suggested were adopted, it would be necessary, in order to maintain the present adoption as one duly made without the permission of the husband, to go the full length of ruling that the assent of one separated and distant sapinda (and that the natural father of the child taken in adoption) is an authority sufficient to validate the act.

Mr. Justice Holloway, indeed, in one place treats Raghunadha as an assenting party to the exercise of the power to adopt, though not to the particular adoption.

Their lordships, however, are of opinion that even this general assent is not established by EE, or by the other evidence in the cause. The parol testimony on this point is untrustworthy; and EE, taking it at its highest, is consistent with the supposition that Raghunadha then intended only to provide for the contingency of the Mahadevi's establishing the authority to adopt, which she said she had derived from her husband, and exercising it in favour of his son. It must, therefore, be taken

that the only sapinda of Adikonda, who is shown to have assented to this adoption, is the Rajah of Peddakimidy, the father of the adopted child; and their lordships have already intimated their grave doubts whether such assent would in any case have constituted a sufficient authority.

In the present case there is an additional reason against the sufficiency of such an assent. It is admitted on all hands that an authorization by some kinsman of the husband is required. To authorize an act implies the exercise of some discretion whether the act ought or ought not to be done. In the present case there is no trace of such an exercise of discretion. All we know is that the Mahadevi, representing herself as having the written permission of her husband to adopt, asked the Rajah of Peddakimidy to give her a son in adoption, and succeeded in getting one. There is nothing to show that the Rajah ever supposed that he was giving the authority to adopt, which a widow, not having her husband's permission, would require.

Their lordships have deemed it right to make these remarks, though not essential to the determination of the present appeal, because this doctrine of the power of a widow, not having her husband's express permission to adopt a son to him, which, before the decisions in the Ramnad case had not assumed very definite proportions, has obviously an important bearing upon the law of property in the Presidency of Madras. It may be the duty of a Court of Justice administering the Hindoo law to consider the religious duty of adopting a son as the essential foundation of the law of adoption; and the effect of an adoption upon the devolution of property as a mere legal consequence. But it is impossible not to see that there are grave social objections to making the succession of property, and it may be in the case of collateral succession, as in the present instance, the rights of parties in actual possession, dependent on the caprice of a woman, subject to all the pernicious influences which interested advisers are too apt in India to exert over women possessed of, or capable of exercising dominion over property. It seems therefore to be the duty of the Courts to keep the power strictly within the limits which the law has assigned to it; and the propositions of Mr. Justice Holloway appear to their lordships calculated unduly to enlarge those limits.

Their lordships have further to observe that the decree, as it stands, makes the defendant accountable for mesne profits from the time when he was placed in possession by the order of Government. That was about September 1869. At that time Raghunadha was, in default of a son of Adikonda, natural or adopted, unquestionably entitled to the zemindary. The adoption took place on the 20th November 1870, and the plaint states that the cause of action then accrued to the plaintiff. The plaint itself was filed on the 15th December 1870, and there is no proof of a previous demand of possession. Their lordships are of opinion that the account of mesne profits should run only from the commencement of the suit. They think that the decree, with that modification, ought to be affirmed, and they will humbly advise Her Majesty accordingly. But their judgment must be understood to proceed on the establishment of Q as a genuine permission to adopt; and not upon the ground upon which the High Court principally relied. The costs of the appeal must follow the result.

MISCELLANEOUS.

THE BEST METHOD OF LAYING OUT AND WORKING SALT-PANS.*

(*Concluded from page* 126.)

37. The best time to gather the salt is in the early afternoon, when the sun is at its hottest, directly the coolies have finished their midday meal. At that time there is the least chance of the salt being adulterated with magnesic sulphate, which is much more soluble in warm than in cold water. The salt cakes when lifted from the sand rapidly break up. They should be placed in baskets ranged along the pathways, and there left to drain till sundown, when the salt should be carried off and stored. This will necessitate a large number of baskets, but baskets are cheap, and it will be found a real economy to provide them abundantly. The natives lose a certain amount of salt each scraping, a large quantity at the end of the season, through heaping it on muddy pathways, and what they do carry away is more or less soiled. The fresh irrigation should always be let on to the beds as the salt is being gathered, partly with a view to wash it, but more especially to dilute the magnesic chloride in the mother liquors.

38. Two or three hours' draining at the bedside, and the constant drainage in a well-constructed store, shut off from atmospheric moisture, will probably dry this salt better than two or three days' exposure on the ridges, as, if it is made as described, it will not contain any magnesic chloride except that in the bitterns unavoidably in contact with it, and this will drain away in time. If exposed in the open, apart from the chance of its being smug-

* Report addressed to the Sub-Secretary, Board of Revenue, Madras, by Surgeon J. J. L. Ratton, M.D., dated 15th November 1875.

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gled away, magnesic chloride will dry on it in the heat of the day, and re-absorb moisture at other times. According to Mr. Pogson's reports our atmosphere contains about 70 per cent of moisture during the salt season, and all ordinary salt must suffer from exposure to this. Natives leave their heaps exposed, apparently through carelessness, but after all it is to their advantage to do so, since the heaps absorb moisture and gain in weight.

39. The salt should be stored on grooved double-inclined planes within the walled enclosures on the platforms. The roof of each heap should be trained up to as acute a gable angle as is consistent with tile coverings, for tile coverings have been proved to be in every respect the best. Here the salt should be allowed to drain, on the platform, for at least three months before being sold.

40. Government has hitherto bought fresh made salt and sold it after its moisture has drained away allowing wholesale dealers 5 per cent for loss of weight. This is hardly fair. A certain percentage for moisture should be deducted from the price paid, or else manufacturers should be compelled to take such ordinary precautions as are described for supplying it dry. Under the present native contract a moist inferior article must be accepted, and this is I think a strong argument in favor of giving large contracts to Europeans. If the European merchants, who now desire to do so, are allowed to manufacture and repurchase wholesale their own salt, this 5 per cent discount will be entirely saved. What the discount loss throughout the Presidency amounts to, I don't know. Last year it was Rupees 1,12,080 at the Madras Kotaurs alone.

41. Allowing for irrigation purposes one cooly to every five salt-beds, a salt work of 50 acres will require about fifteen permanent coolies in addition to the men in charge of the pumping machinery. At harvesting time extra coolies will have to be employed to carry off and store the salt. In France skilled workmen on the establishment gather the salt from the beds, contractors take it to the platforms and heap it. An allowance of one salt cooly to five beds will not admit of this being done, but it will give sufficient skilled superintendence to the work. At 3 garce per acre per mensem, there will be every fortnight 75 garce to get into store. About 300 coolies will be required to store this in the course of a single afternoon. If 300 coolies are not procurable in the neighborhood, the arrangements sketched will have to be modified, a larger number of permanent coolies employed, bed scraped on different days, &c.

42. I think I have written enough now to enable any one to lay out and work a salt manufactory as well as can be done in the present state of our knowledge. The arrangements sketched are confessedly imperfect in one very important detail—the stability and permanence of the salt-beds—upon which every thing else depends, and for this reason I have not entered upon the question of cost. The very low estimate of the cost of salt manufacture which I formed in 1872, and published in my first report, was based upon the assumption that the continuance of manufacture depended solely on the weather. Experience has since taught me that this is not the case; it depends also, and to an equal extent, on the stability of the salt-beds. Under the circumstances I would prefer to postpone the consideration of this subject until I had practical experience of clay works on a large scale; but inasmuch as several merchants have lately written to me asking for information on this point, and expressing their willingness to embark capital in salt manufacture, I think I ought to make a few remarks as to its probable cost.

43. I will assume that we have to deal with a plot of 50 acres, though the larger the site the better. The embankments, platforms, supply canals, masonry works, pathways, and condensers, inasmuch as they endure practically for ever, are a sort of real estate, and salt manufacture is only chargeable with the interest on the capital sunk in them. Government has hitherto undertaken the construction and maintenance of the first four items, incomparably the most expensive. Whether this assistance, which has been invariably given to natives, will be extended to Europeans is a question. The fact that, under existing rules, Government retains to itself the power of closing the salt-pans without compensation would, I suppose, affect the decision of this question. Machinery likewise being of a permanent nature, the interest on its cost would alone be debited to the salt. Now it is simply impossible for me to make a correct estimate of the outlay on these works; it will depend so much on the figure or shape of the area and on the levels, but any one who has a mind to manufacture salt can select a site and calculate the cost for himself. The annual charge for repairs will be less than Rupees 30 an acre, or Rupees 1,500. The monthly expenditure on labor will be less than Rupees 200, or in four months Rupees 800. The total annual outlay will thus be less than Rupees 2,300. The produce will be at the rate of 3 garce an acre a month for four months, that is 600 garce at the end of the season, which valued at Rupees 12 gives Rupees 7,200. Deducting the annual outlay we have Rupees 4,900 profit balance to set against the capital invested. A fair practical knowledge of the amount of capital invested may be had by examining the accounts of the Sevandakolam pans opened last October near Tuticorin. The area

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of the Sevandakolam swamp was 81·74 acres. It was surrounded by a lofty embankment and a deep canal; another canal about half a mile in length was cut to supply it with sea water; a bridge, sluice-gate, and platforms, &c., were built. In fact it was provided with every requirement for a salt station at a cost of Rupees 13,733-11-9. Supposing that our 50 acre site would cost as much, we have Rupees 4,900 interest on a capital of Rupees 13,733-11-9 which is at the rate of 35 per cent. If Government undertook half the cost of permanent works, the manufacturer would get 70 per cent on his money, and Government would yet escape half the expenditure which ordinarily devolves upon it. If the manufacturer worked, as natives now do, within Government enclosures, he would get Rupees 7,200 interest on Rupees 2,300 expended. This is a small matter no doubt, but there is no reason why a firm or a company should not work hundreds of acres as they do in France. By way of checking the foregoing, I may state that at a rate of evaporation equal to one-third of an inch per diem, and supposing that only 2 per cent of the 2·6 per cent of sodic chloride contained in common sea water was crystallised out, we should get 932 garce of salt from 50 acres in four months, valued at Rupees 11,184. At Sevandakolam in the first season, although all of the site was not cultivated for salt, and work began very late, 877 garce of salt were produced. It should be stated that, with a condensing reservoir containing brine at 6° Beaumé, we should get double the quantity of salt obtainable from sea water, and that with subsoil brine at 12° Beaumé we should get four times the amount, and these conditions of brine are often met with in practice. Mr. Cammiade had brine at 6° Beaumé in his reservoir this season, and a reference to my salt station reports will show that at many places subsoil brine from 9° to 12° Beaumé is habitually used in manufacture. At one place, Vedarniem, in the Tanjore District, the brine in the wells sometimes registers 25° Beaumé, showing that it is saturated with salt.

44. It will be evident from what has been stated that the quality and condition of the salt-beds is a matter of vital importance in salt manufacture. Whilst at Ennore this year I tried with six different materials to make artificial salt-beds which would satisfy the requirements of manufacture in this country. The first bed was made with bricks, laid down on a clay flooring, prepared as in paragraph 27, and covered with shell-lime cement, finished off in the way that verandah floors and masonry baths are commonly finished. This bed was given out on contract and completed at the rate of 4 annas 3 pies a square yard. It was scraped for salt from the beginning of August until the end of September, during which period it was scraped ten times. It did not leak; the salt was scraped up from it with great ease, and it was of unsurpassable quality; but after the third or fourth scraping, the chunam surface got rough, and towards the close of the experiment it was beginning to scale away in patches. I was not favorably impressed by the behaviour of this bed, but on the other hand it was got ready during the prevalence of showery weather, and was not, therefore, at any time, a first class one. Its area was 76 square yards. It cost Rupees 20.

45. The next bed was made with a quarter of an inch in thickness of Portland cement, floated over a brick "jelly" foundation, laid down on a prepared clay site. It cost Rupees 1-3-9 a square yard, particulars as under:—

	RS.	A.	P.
Portland cement	16	14	0
Carriage, that is boat-hire	0	10	0

Making the bed.

	RS.	A.	P.			
Powdering the cement ...	0	8	0			
Bricks	1	8	0			
Carrying bricks	0	8	0			
Do. sand and water ...	0	6	0			
				2	14	0
Total...				20	6	0

This bed was under observation for a little more than a month, during which period it was scraped seven or eight times. It gave the utmost satisfaction throughout, and did not at the end of the season show any signs of wear. Area 16½ square yards.

46. The third bed was made by floating over a similar foundation half an inch thickness of General Morgan's patent hydraulic cement. It cost 11 annas 2 pies a square yard, as per account:—

	RS.	A.	P.
General Morgan's cement	13	8	6
Carriage, that is cart-hire	2	8	6

Making the bed.

	RS.	A.	P.			
Carrying cement to the bed.	0	10	0			
Bricks	1	12	0			
Carrying brick, sand, and water	0	12	0			
Cooly women	0	10	0			
				3	12	0
Total...				19	13	0

This bed was also at work for about a month, and was scraped six or seven times. It gave a slightly pinkish tinge to the salt, and showed considerable signs of wear at the end of the experiment. It does not seem to be well adapted to salt works. Area 28 square yards.

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47. The fourth bed was formed of artificial stone made with magnesite on the French plan, as follows:—Magnesite or magnesic carbonate was calcined in a kiln just as calcite or marble is to drive off the carbonic acid. It was then mixed with half its bulk of coarse sand and spread out to a thickness of half an inch on a "jelly" foundation similar to that in the other beds. It was then submerged in mother liquor at 28° Beaumé taken from an adjoining bed, and allowed to rest until it hardened, which took about twenty-four hours. The theory of the process is this. Magnesite is reduced by heat to magnesic oxide. This is moulded with coarse sand to any shape required, and thoroughly drenched with a strong solution of magnesic chloride, such as the mother liquor of salt manufacture; the magnesic oxide and chloride combine to form magnesic oxi-chloride, which crystallising compacts the mixture into a hard firm stone. This bed cost 6 annas 5 pies per square yard as per account subjoined. Area 16 square yards:—

Carriage.

	RS.	A.	P.	RS.	A.	P.
Railway charge	4	4	0			
Cart-hire to chunam factory	0	6	0			
Boat-hire	0	10	0			
				5	4	0

Making the bed.

	RS.	A.	P.	RS.	A.	P.
Bricks	0	12	0			
Carrying bricks	0	3	0			
Do. sand and water...	0	3	6			
				1	2	6
Total...				6	6	6

I had great hopes of this magnesite bed, and have faith in it still, although this particular bed reported upon was decidedly softening towards the close of the month it was in use. But this bed was made with brine at 28° Beaumé, whereas it should have been made with brine at 38° Beaumé, which makes all the difference, inasmuch as the latter is a strong solution of magnesic chloride and the former is not, so that the conditions for the manufacture of artificial stone were not in this case fulfilled. Brine at 38° Beaumé was not procurable in July owing to the rains. Perfectly pure magnesite can be obtained in abundance in the neighborhood of the Salem Railway Station, and I would recommend this rock for further trial. The construction of this bed might be cheapened by burning the magnesite at Salem before sending it by rail to Madras.

48. The fifth bed was made with gypsum. Lenticular fibrous crystals of gypsum are to be found in the soil about many salt stations. In fact calcic sulphate is contained in sea water, and gypsum is a bye-product of salt manufacture. I drew attention to the presence of gypsum at the Chunampett Salt-pans, South Arcot, and I find that similar crystals are plentiful at Ennore. At 275° Fahrenheit gypsum abandons its water and changes into anhydrous, often called plaster of Paris, which again on the addition of water rapidly recrystallises into a solid mass. Such is the explanation of its action. Inasmuch as gypsum, if heated to redness, melts and changes into anhydrite, which will not take up water, I had to burn the crystals in chatties under my personal supervision, and the resulting anhydrous was ground to powder, in detail, in stone mortars. The expense of preparation was in consequence very great, greater than that of procuring the mineral. In practice this would not be the case, and the cost per square yard would be very much less than it is shown in the following account. Area 16 square yards:—

	RS.	A.	P.	RS.	A.	P.
Gypsum				3	14	0

Making the bed.

	RS.	A.	P.	RS.	A.	P.
Preparing gypsum ...	4	8	0			
Bricks	0	12	0			
Carrying bricks and water..	0	7	0			
				5	11	[illegible]
Total...				9	9	0

Half an inch in thickness of the anhydrous powder was spread over the brick concrete bed as in the last case and watered. It set with such rapidity that in ten minutes the coolies walked upon it, but I found that the upper surface in crystallising had in many places formed a crust, which prevented water from percolating through the whole thickness of the material, and these crusts subsequently breaking spoiled the bed. The powder should have been first thoroughly mixed into a paste or plaster with water and then laid down. Knowing how quickly it set, I did not think my coolies could do this and lay it level and smooth in time. Further experience of this material for salt-beds is desirable. True plaster of Paris has the adjoining composition. An attempt might also be made to manufacture and apply it to the wants of salt culture.

C_aS_{o4}	...	70·39
H_2O	...	18·77
C_aC_{o3}	...	7·63
Clay	...	3·21
		100·00

49. The sixth and last bed was made with a hydraulic cement of my own design, containing 25 per cent more lime than Portland cement, manufactured at the Government Kilns with Ennore carbonaceous clay, containing 7·5 per cent of sand, supplied by me. The Superintendent, Northern Range, states that it was made in the following manner:—

"The clay was broken up into cubes of about

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half an inch, dried, weighed, and ground, to which was then added one and a half times its weight of slaked shell lime and thoroughly mixed. This mixture was then made into a thick paste, ground in a mill, made up into balls of about three inches in diameter, dried, burnt, and then ground into a fine powder." This bed cost 8 annas 7 pies per square yard, inclusive of carriage of materials from Ennore, to and from the Government Kilns, Madras, as per account. Area $27\frac{1}{2}$ square yards.

	RS.	A.	P.	RS.	A.	P.
Digging clay and boat-hire to Madras	2	6	0			
Boat-hire from Madras ...	1	4	0			
				3	10	0
Chunam				7	0	0
Making the bed.						
Bricks	1	12	0			
Carrying brick and water...	0	12	0			
Do. cement	0	8	0			
				3	0	0
Total...				13	10	0

This hydraulic cement was applied to the formation of a salt-bed precisely in the same way that the Portland cement had been, but it was received so late in the year (1st October) that I was unable to test it in salt manufacture. It formed, however, as far as could be judged, a hard enduring salt-bed. The clay for this bed was sent to the kilns on the 21st August. Beds of this material could be made for much less than 8 annas 7 pies per square yard if the clay and lime were procured and prepared on the spot, as both might be at Ennore for instance.

50. Such, briefly, were the experiments made to determine the possibility of making solid and lasting salt-beds. They were not very successful, even as experiments, for reasons connected chiefly with the weather, and, like all first attempts, they are capable of being improved upon. The Portland cement, the hydraulic cement noticed in the last paragraph, and the magnesite seemed to me to offer the best chances of success. One drawback which ran through the whole series of experiments must here be mentioned. The clay walls and paths surrounding the beds were left untouched, and these gradually crumbling away dirtied the beds and allowed water to get under them and soften the clay floorings, so that the beds sank and cracked after they had been abandoned during the north-east monsoon. This shows the necessity of making the sides of the beds as solid as the floors, and of taking measures to prevent the access of water to the clay foundation.

51. Owing to a fear of its costliness I made no experiment with wood as a material for salt-beds, although I know it is so used in America, and I have long considered it to be the most suitable substance we possess for the purpose. Planking has many advantages. It could be pegged down so quickly at the beginning of the season, removed and replaced at any time if necessary, and taken up and stored during the monsoon. It is precisely the sort of material we want for a salt flooring, and owing to the antiseptic action of saturated brine which arrests natural decay, it would probably last an indefinite time. Should my connexion with salt manufacture continue through another season, I will give it a trial. I have great hopes of it, and do not think that it would cost more than 1 Rupee a square yard.*

52. The salt work I laid out at Ennore this year was made solely for the purpose of showing the West Coast Deputy Collectors how to turn an acre of ground to the best advantage. I commenced it on the 19th of May, too late in the season, to look for any profit from it. For this reason, and because the acre model can be applied, by magnifying all its parts proportionately, to the construction of ullums ten times that area, I did not think it advisable to spend money on a larger work. It is a model adapted to small native holdings, devised, in case of need—in case, for instance, substantial men will not come forward and work the new sites on enlightened and paying principles. Three-fourths of the acre were devoted to condensation, one-fourth to crystallization. There were six condensers and eleven salt-beds, with the necessary channels, paths, &c., yet only 5 per cent of the whole acre by actual measurement was dry and unproductive. In a letter to the Sub-Secretary, Board of Revenue, Proceedings No. 3,247, dated 11th November 1874, I stated (paragraph 3) that I did not think I could put the dry ground at less than 15 per cent in a good ullum, and that it was more than that in most native works. The first part of this statement must now stand corrected. The salt-beds made as described at paragraph 27, were irrigated for the first time at the end of June, and manufacture was stopped by the rains at the end of July. At that time, that is in one working month, I had made three garce of salt. The cost of making these pans was Rupees 82-6. The cost of working them with three coolies at Rupees 5 a month each was Rupees 15. They were capable of yielding three garce of salt a month, which at the end of a five months' working season would produce, at Rupees 12 a garce, Rupees 180. The expense of making and working them in the first year would be Rupees 157, showing a

* In calculating the cost of laying down wood and other materials for salt-beds, it must be remembered that the beds with their paths and channels occupy but one-fourth of the whole area; thus, the area of bed flooring in a fifty-acre site would be less than 60,000 square yards.

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profit of Rupees 23. The profit would be greater in subsequent years. It would pay a cooly to work these pans, inasmuch as he would get Rupees 180 at the end of the season against an outlay almost entirely of bodily labor on the part of himself and two relatives for six months, but it would pay no one else, and even a cooly, not so well as to make him take an interest in his work; hence the great disadvantage of small salt works.

53. I spent at Ennore this season Rupees 267-12-8, roughly as follows:—

	RS.	A.	P.
Construction of acre ullum ...	82	6	0
Working of acre ullum one month..	15	0	0
Implements...	7	13	0
Making ullum in connexion with artificial beds	25	6	8
Artificial beds	107	3	0
Working artificial beds two months.	30	0	0
Total...	267	12	8

The account in detail has been furnished to the Accountant-General. The implements are on sale at the office of the Salt Deputy Collector, Ennore. Three garce and forty-three maunds of salt were forwarded to the Madras Kotaurs.

54. As Mr. Cammiade has, I understand, already addressed the Board with reference to the salt manufactory established by him this year at Ennore, I need not enter into any very minute description of it. Yet, lest he should be eventually disappointed, or others discouraged, by the result of his labors, I will notice some weak points in his arrangements. Mr. Cammiade's pans, which were intended to be a copy of similar works in France, were sanctioned by the Board in March and commenced in April, before the publication of my report on the French *salins*. I visited the site in March on my return from France, and gave Mr. Cammiade all the information and assistance I could. The works were begun whilst I was on the West Coast. On my return I found that Mr. Cammiade had made an excellent reservoir, a substantial platform, and that he was pressing on with the construction of his crystallising beds. He had made no embankments encircling his salt-pans, and through some misconception of my instructions, he had commenced his pans at the wrong end, and had nearly finished his salt-beds before beginning his condensers. As a consequence of this, the beds were irrigated with brine at about 7° Beaumé, taken, I believe, from the subsoil brine in the platform-tank, and they rapidly softened and had to be remade to the confusion of his plans; and when the July rains put an end to salt work, his system of condensers had not yet been completed. Notwithstanding this, however, he had a fair measure of success, scraping, I believe, 13 garce of salt valued at Rupees 156 upon an outlay of about Rupees 1,000. This would be very gratifying and encouraging, considering the lateness of the season at which he commenced operations, and the radical fault noticed, if he were certain of his capital. But as his pans are unprotected by an embankment, I think it quite possible that he may find himself after the monsoon precisely in the position he was in last March, in the possession of an eligible mud bank, and that he will have to begin again at the beginning. Should the case be otherwise, he may be congratulated on having achieved a financial success. However the case may be, he has shown himself to be a man of considerable energy and resource, and one well qualified, personally, to conduct the infant enterprise which he is endeavoring to establish to a successful maturity, and I trust the Board will give him such assistance and encouragement as may lie in their power.

DIAMONDS AND GOLD:—HYDERABAD.

(To the Editor of the Times of India.)

SIR,—I have read with much interest the letters in your columns by Captain Burton about Hyderabad—especially those parts of them which relate to the mineral resources of the country. As I spent a few months last year in the Nizam's dominions preparatory to making a complete mineralogical survey of the country, a few remarks regarding what I saw and found may not be inopportune or uninteresting. The fact of diamonds having been found from the remotest times in the territory of the kings of Golconda, is of course well known; and diamonds having been once found, the natural inference is that there will in all probability be others discoverable where the former came from, for in a country of such vast extent as the Nizam's dominions, it would be absurd to suppose that the diamond mines are by any means worked out. The geological features of the country are of a character peculiarly adapted for the production of crystalline substances, whether in the shape of diamonds, chalcedony, or quartz; but how these minerals have been produced, and whether they grow (as the Australian miners say gold grows and Captain Burton infers), it would be extremely difficult to determine. I apprehend the formation of diamonds, as well as of other crystals, is the result of intense heat and the gradual cooling of the substances of which they are composed; and I also suspect that the diamonds are formed in a vacuum, and the more perfect the vacuum the harder they would be—hence the difficulty of making them artificially. I have in my possession some curious specimens of quartz and chalcedony crystals, which have evidently been formed in this manner; and I

have also some specimens of cornelian (white), which have all the appearance of having been in the form of paste, not unlike book-binders' paste, where some sliding motion has produced the appearance to its having been dabbed on the stone with a brush.

I was in the diamond fields of South Africa more than 20 years ago, from whence I brought some specimens of crystalline substances which were found to be carbon, but the specimens were neither pure nor pretty. I have generally regarded searching for diamonds very like searching for a needle in a hay-stack, for however pretty and however great the value that may be put upon them, and though they possess economic value to a country when found in abundance—as in the Cape and Brazil—still there are other minerals which I think are of as great if not greater importance to a country. I will say nothing about coal and iron, which exist in vast abundance in the Eastern part of the Nizam's territories. The coal, it is true, hitherto found is not of a superior quality, and iron can be made so cheaply in England that it will be a very long time before that made in India will be able to compete with the English, however abundant the raw materials may be here.

From what I saw and found around Hyderabad itself, I do not believe that it would be necessary to go far to find diamonds. I suspect, indeed, that the tombs of the kings of Goloonda were built not very far from a diamond field. Crystals of the purest water and extremely hard are to be found close to the line of those black rocks on which the tombs are built, and there are many other localities where such crystals are to be found, notably one in the very heart of Secunderabad—but these crystals are not diamonds. There are several places (I know of more than a dozen such) where crystals of various colours, but mostly white, greenish, or black, are to be found, and where the strata resembles that described by Dr. Balfour, Captain Burton, and others as being diamondiferous; but it requires a considerable amount of enthusiasm for such kind of research to induce any to hunt for the coveted stones. Diamonds are, however, by no means the only minerals to be found in Hyderabad. The common brown opal is plentiful, and the purple quartz of Bowenpilly and elsewhere is found in abundance, but they are of little or no value as gems; they have, however, a value of quite another kind.

There can be but little doubt that the country between Hyderabad and to the westward is auriferous, but whether sufficiently so to be worked with profit, it would be impossible, according to the data obtained by me and others, to say for certain. The grey and white quartz picked up contains minute but visible grains and plates of gold; but if the search were followed up, probably sufficient would be found to pay more than the expenses of its working. We know that gold has been and is still found in many parts of India—it would be a miracle if it were not. I have obtained it in Wynaad and in the Himalayan valleys, but in an old country like India, the gold originally found at and near the surface has no doubt been worked out and carried away. In California, Australia, and elsewhere, where the countries were new and virgin, the surface gold first attracted attention; but now in Australia some of the richest mines are upwards of a thousand feet deep—the surface gold and nuggets in India, if there ever were any, are gone, and the deep diggings only remain. I would particularly invite Captain Burton's attention to that part of the Nizam's country west of Hyderabad to Goolburgha, and if he is acquainted with Australia he cannot fail to be struck with the marked resemblance there is between the geology and general appearance of the two countries—it is most marvellous, and it would be still more marvellous if they were not alike auriferous. It is not necessary, however, to remind people that it is not "all gold that glitters."

But gold and diamonds are not the only minerals lying dormant in the Hyderabad country. There is zinc in an unmistakable shape, and no doubt in large quantity. Then there are traces (only traces) of tin, also of copper, but the specimens (purple and green carbonates) obtained were small though very decided; likewise galena, this also only in small specimens, but very distinct. It was at first a puzzle to me that these minerals had not been discovered before, but when I was shown a specimen of chlorite and was gravely assured that it was malachite, and a piece of mundic as gold, by one who was supposed to be an authority and ought to have known better, I was no longer surprised.

I regretted at the time that I was unable to follow up the traces I had come upon, but some reasons intervened to prevent the survey going on and my diligent searches and copious notes became useless: they were sufficient, however, to prove that Hyderabad is a very rich mineral country and there are some peculiarities in the geology which resemble in a most remarkable manner other well-known mineral countries with which I happen to be familiar. But I had only got the end of the clue to the peculiar geological formation and mineralogy of the region when I was obliged to discontinue my work.

WILLIAM SOWERBY, C.E, F.G.S.

April 1876.

P.S.—While on the question of gold mining

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in India, I may refer to a striking example of mismanagement in the mining operations commenced in Wynaad (the Alpha Mine, I think it is called). Instead of taking the advice of an expert, machinery has been brought out, and when tried it has failed to answer its purpose—it is not suited to the work in some way or other, too light, too small, or too something; so the company, instead of the enterprise paying, as was expected, promises to be a failure.

W. S.

IPECACUANHA.

The plant (*Cephalis Ipecacuanha*) which yields the secretion known in pharmacy as Ipecacuanha is a native of Brazil; and, as the drug is an almost perfect antidote to that terrible disease of tropical climates, dysentery, it must be interesting to know that the cultivation of the plant has been successfully introduced both in Bengal and Madras. In March 1866, Dr. King of the Royal Botanical Gardens obtained from Dr. Hooker the Director of the Royal Gardens at Kew and brought out to India, a single plant of the *Cephalis Ipecacuanha*, which he made over to the Calcutta Botanical Gardens. As it showed no tendency to yield seed, every effort was made to propagate it by artificial means. By 1868 this one plant had thus increased to nine, but as the climate of Calcutta did not seem to suit the Ipecacuanha, three out of the nine plants were sent during the same year to the Cinchona plantation in Sikkim, where it was hoped that in some low, hot valley, a suitable locality might be found. One of the three plants died soon after arrival at Rungbee. On the 31st March 1869, the surviving two had been increased to five rooted plants and one cutting; but the cutting subsequently died. On the 31st March 1870, there were still the same five rooted plants, but seven cuttings. Again, the cuttings were unfortunate; as they were completely destroyed by an accident. It was then determined not to cut the tops of the plants again, as it was found that after cutting, the plants took a long time to throw out fresh shoots and even then most sparingly. But the plants were partially stripped of their roots when a good supply of them had been formed, the detached roots being cut into very small pieces, and treated as ordinary cuttings. By this method which, according to Weddell, is actually practised to preserve the stock of Ipecacuanha plants in the forests of Brazil, the number of plants and cuttings at Rungbee had increased by the end of August 1871 to about 300.

In September 1871, eleven plants were received from Edinburgh, whence also a further supply of 369 plants, was sent out in the following year. In December 1872, Dr. Henderson brought out from Kew and Edinburgh a further consignment of 128 plants, the greater part of which, after cuttings had been taken from both root and stem, were with their roots packed in slightly moist earth and sent to Sikkim, which they reached as fresh and healthy as on the day they were sent from Calcutta. In Calcutta two plants were killed by exposure to the sun; such of them, however as were kept under shade appearing to thrive. In the meantime, propagation had been steadily carried on, both in Sikkim and in Calcutta. In the former place, not only had leaves planted as cuttings been successfully made to strike root, but in ten months these rooted leaves had produced as many as four shoots, from half an inch to an inch and a half long. On the 31st March 1873, the total number of the plants amounted to 6,719 at Rungbee and about 500 in Calcutta. The total stock of plants both at Rungbee and in Calcutta on the 31st March 1874 was as follows:—

Planted outside experimentally ...	292
Rooted plants potted off and planted in frames...	13,000
Cuttings, rooted and unrooted ...	50,000
Total...	63,292

This success in propagation is entirely due to the fact that the Ipecacuanha, unlike most other plants, can be increased freely by root-cuttings; while from the slowness of its growth, materials for stem-cuttings are very sparingly yielded.

The plants in Sikkim are located about 3,000 feet above the level of the sea, in glass-covered frames, and are set in a mass of well-drained leaf-mould, but without bottom-heat, which is only used when cuttings are being struck. The young plants in the frames are most healthy in appearance; the leaves are of a dark green color without a single spot or blemish; but it has not yet been ascertained whether the Ipecacuanha, which is a slow-growing plant, will, under any particular conditions, thrive in the open air—it is believed that the plant requires a moist, hot, equable climate with a soil porus and well-drained—in fact resembling leaf-mould, but that it will fail in places subject to periodical inundation. Hitherto the chief object in cultivating the Ipecacuanha has been to increase the number of plants, so as to secure a sufficiently large stock for experiment with the view of determining the conditions under which it can be grown as a crop.

When the experiment in acclimatisation was started, the nature and habits of the plant, and the conditions required for its growth were scarcely known. It has now been ascertained that it is a humble, creeping, under-shrub of peculiarly slow growth, and that it requires a thoroughly tropical climate, that is to say, an equable day and night temperature, no decided

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cold season and an atmosphere pretty steadily and thoroughly saturated with moisture. It has also been found that it cannot stand exposure to a hot sun, and that it is apparently very impatient of stagnant moisture at its roots. Experiments however are in progress for ascertaining the nature of the soil, which will best promote the development of the root —the medicinal part. Two encouraging facts may however be here noted; namely, *first*, that when the Ipecacuanha is rooted up, the plant is reproduced from the fragments of the root left in the ground either purposely or by accident, so that a crop can be gathered in every three or four years without re-planting; and *second*, that some plants which throw out very little foliage and do not seem to be thriving are found, when dug up, to have made a large quantity of root.

As a first step towards growing Ipecacuanha profitably as a crop, patches of plants have been put out at different elevations, and under different conditions as to soil, moisture and shade. But the result of these experiments has not yet been published. It may be satisfactory to know that after actual trial in the Medical College Hospital, at Calcutta, the Sikkim Ipecacuanha in its therapeutic properties has been pronounced fully equal to the same drug imported from Brazil.—*The Indian Agriculturist*, Vol. I, p. 63.

THE INDIAN GUTTA PERCHA TREE.

The Indian Gutta Percha Tree (*Isonandra acuminata*), which promises to be of some importance among the vegetable products of the Peninsula, was discovered in the Wynaad Forests by Mr. Lascelles, so very recently as in 1850. General Cullen, however, deserves great credit for ascertaining its locality and extensive distribution among the forests of the Western Ghauts, and for bringing its useful product to public notice. The tree occurs in abundance in Wynaad, Coorg, and Travancore and the Annamallay mountains. Its range is extensive, being found at the foot of the Ghauts, as well as at elevations of about 3,000 feet above the sea. It is so lofty a tree, and runs to such an immense height without giving off branches, that the form of its leaves is undistinguishable by the naked eye from below; and it is generally recognised only by its fallen fruits and flowers. The bark is rusty, often whitish, from the presence of numerous lichens; and a section of the trunk shows a reddish and sometimes mottled wood. The timber, when fully grown, is moderately hard, though it does not appear to be much sought after for economic purposes. The exudation from the tree, which bears some similarity to the gutta percha of commerce, is procured by tapping; and the quantity obtained at each tapping is, by no means, inconsiderable. But the tree requires an interval of rest for some hours, if not days, after frequent incision. According to General Cullen, "in five or six hours, upwards of 1½lbs was collected from four or five incisions in one tree." Again, "incisions were made in forty places at distances nearly three feet apart along the whole trunk. The quantity produced was 1¼ gallons; the reeds were placed again, but in the evening no more milk was found: but the bark is thin and the juice soon ceases to flow, although there is plenty of it in the tree." The gum when fresh, is of a milky white color the larger lumps being of a dullish red. On an analysis of its properties in England, Messrs. Teschemachar and Smith gave the following opinion: "It is evident that this substance belongs to the class of the vegetable products, of which caoutchouc and gutta percha are types and that it greatly resembles "bird-lime" in its leading characteristics, but in a higher degree. It is evident that for water-proofing purposes it is (in its crude state) unfit, for although the coal tar and oil of turpentine paste might be applied to fabrics, as similar solutions of caoutchouc now are and a material obtained impervious for a time to wet, yet that owing to the capacity of this substance to combine with water and become brittle in consequence at ordinary temperatures, such a water-proof fabric would become useless very quickly. We do not of course in any way imply that in the hands of some inventors this and other difficulties to its useful application may not be overcome. Although unfit for water-proof clothing, movable tarpaulins and its like, yet it might be usefully employed to water-proof fixed sheds or temporary erections of little cost covered with calico or cheap canvas; but there are already a numerous class of cheap varnishes equally adapted for such "a purpose; so that as a water-proofing material, it is but advisable for the present to look upon it as useless."

"Its perfume when heated might possibly render it of some value to the pastille and incense-makers."

"The only extensive and practical use, however, in this country, to which we at present think it may probably be with advantage applied is as a subaqueous cement or glue. We beg to forward some deal wood glued together with this substance melted and applied hot, which we have now kept under water for several days and two fragments of glass which have been similarly treated. The cement has hardened at the edges, but probably without injury to its cementing properties. We have no reason to think that it would not rot under water more rapidly than wood does, but experience must be the sole guide here. We have reason to think such a glue or cement would be readily tried and if found good, employed by joiners and others. It is quite probable that a series of careful experiments with this gum

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may lead to the discovery of some substance, in combination with which it may be utilised with the same effective and permanent results as caoutchouc.

As regards the wood, an experienced forest officer writes: "It is not unlike *sal* in the grain, and yet it takes after the character of some of the harder kinds of *cedar* and *kurbah*. As the wood is capable of receiving a good polish, I am inclined to think it ought to make good furniture. Its specific gravity, weighing the specimen piece in hand, appears to be about 50lbs to the cubic foot, and as the fibres possess both solidity and strength, I should say the wood ought to be useful in making doors, windows, &c., if not too readily destroyed by white ants; but I doubt whether it will be found capable of sustaining much weight, for the coalescing deposit is rather too pithy to make it useful as beams for terracing."—*Idem*, p. 130.

CATECHU TREE.

The Catechu tree (*Acacia Catechu*), which is to be found in almost every part of India, yields the substance, known formerly as *terra japonica* and also called catechu and cutch. It is extracted from the unripe pods and the old high colored wood of the tree. The mode of its preparation in the northern parts of India has been minutely described by Dr. Royle. The chips of the inner wood are put into an earthen pot with water and boiled. The clean liquor is then strained off and when of sufficient consistence, it is poured off into quadrangular moulds of clay. The substance produced is usually of a pale red color. According to Ainslie, it is used in Berar to dye chintz and other cloths. It is occasionally mixed with plaster to increase its adhensiveness and, when applied in combination with certain oils, is believed to be effective in preserving wood against white ants. Catechu contains a larger proportion of tannin than any other astringent substance; and it has been found that 1 lb. of it is equal to 7 or 8lbs. of oak bark for tanning purposes. The manufactured article is brought down in large quantities chiefly from Berar and Nepal to Calcutta, whence it is exported to Europe.

The most celebrated catechu, which is obtained from Pegu, is prepared much in the same manner. As soon as the trees have been felled, the whole of the exterior white wood is carefully removed, and the interior colored portion is cut up into fragments, which are placed in iron cauldrons or large earthen pots and, with water sufficient to cover them, boiled until the decoction is about half evaporated. The chips are then removed and the boiling is continued till the liquor acquires sufficient consistency. The substance is next spread out on leaves in a wooden frame, where it is completely dried by exposure to the air and finally cut up into pieces for the market.

In Guzerat the catechu is extracted from the heart-wood of the tree by an aboriginal tribe called *Kathodias* and much resembling the Bheels with whom they occasionally, but not often, intermarry. The men bring in the wood from the jungles and cut it up into chips; while the women boil the chips and extract the substance. The trees should be selected of ages varying from 25 to 30 years, and the more distinctly the thin white lines in the heart-wood are perceptible, the greater the quantity of catechu it contains. The *Kathodia* ascertains the fitness of a tree for his purpose by cutting a small notch into the heart-wood. If the tree answers, he fells it and takes it to his house—having previously removed all the sap-wood and a little heart-wood with it from the bole. The wood he requires is then cut into chips of the thickness of the frame-work of match-boxes and about a square inch in size. These chips are boiled in small earthen pots with rather more than two quarts of water and the chips are renewed three or four times a day; three or four handsful of fresh chips being put in each time. The water is poured off from time to time, when considered sufficiently impregnated with the catechu, into two pots kept on purpose and allowed to go on boiling; while the pots from which the liquid has been poured off are replenished with fresh water. At the end of the day, the decoction in the second set of pots is poured into a wooden trough, about a yard long and eighteen inches broad and undergoes a peculiar process of straining. A woman takes a piece of blanket about a foot square, dips it into the liquid, stirs it about and then wrings it out again into the trough, holding it up as high as she can from a sitting position. This process is carried on for about two hours, after which the trough is covered up with a close mat of split bamboos, till the decoction is thought to have deposited the usual quantity of sediment. The water is then tilted out; and the sediment, which is the catechu, is made into small pots and allowed to dry. Naturally formed catechu, which is some times found in the centre of some trees, is considered of highest value.

The manufacturers of this gum (*Kathodias*) are employed in large gangs from 50 to 75 families (each family represents a furnace) by contractors who obtain permits from the Forest Department and pitch their encampments near a river or large river so as to have a large supply of water at hand—each furnace contains eight to twelve pots placed in a double row —the two centre pots being intended to receive the liquid when sufficiently ready for the final boiling. The contractor buys the catechu from the *Kathodias* at 12 or 16 pots for six pies or about 4lbs. to the rupee. This manufacture

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is very destructive; and as the tree does not mature its gum till it is 25 to 30 years old, care should be taken to lay down periodically a sufficient number of plants to replace the trees that may be felled. In the Bombay forests only such trees as, by reason of crookedness or other defect, are not fit for use as timber are allowed to be felled and, then even, every tree is marked for the axe by the Forest Department.

The catechu of Pegu has been known to sell from 4 to 5£ per ton. As the tree grows very freely all over India, its systematic cultivation for the manufacture of the gum might well be tried on lands unoccupied by other and more remunerative crops or plantations. Its timber though not so hard and durable as the wood of other species of Acacia might also be profitably disposed of or utilised.

It should also be borne in mind that large quantities of catechu are consumed by all races and classes of the native population of India as one of the ingredients used in the making up of the betel-leaf for chewing. The demand for this article is not likely to diminish, as the taste for the betel-leaf seems to be rooted in the people; and, as a dye, it will always find a ready market.

It may not be amiss to state here that consequent upon the rapid exhaustion of the catechu producing tracts in British Burmah and the reproduction of this valuable staple being materially affected by the absence of protective measures, the local administration 3 or 4 years ago set on foot a topographical survey and examination of the localities where the catechu tree was most abundant. The same course might with advantage be followed in respect to forests in other provinces where the tree is met with in large numbers and taken up for the manufacture of catechu. Government, as well as land-owners, might to prevent total exhaustion of the trees, reserve carefully selected tracts, plant them and work them in a systematic manner.—*Idem*, p. 130.

OUR OYSTER SUPPLIES.

(*England.*)

During these last four or five years the public have experienced what may be termed an oyster famine. Oysters of all descriptions have been gradually growing in price, till, despite the quantities brought from foreign countries, they have become a luxury which only wealthy people can afford. A dressed codfish, with oyster sauce, now proves too costly for persons of moderate income. A guinea for the fish, and half as much for oysters, compels the frugal housewife of the period to pause before she enters such an item on her bill of fare. The cost of "natives" has been, within the last few weeks, £14 per bushel, which is undoubtedly a high figure for an article that 30 years ago was sold in many places at almost a nominal price, or for the sake of inducing the purchase of liquor was given away to all and sundry! As a bushel of oysters contains about 1,600 individual molluscs, the cost of each, when purchased at wholesale rate, is a little over 2*d.*; but after the dealers have taken their profit, the public will require to pay at least 3*d.* for each native. The Oyster Corporation of Whitstable, strange to say, is not waxing wealthy over the price just quoted; indeed, the high cost of the article has brought business almost to a stand, and the Whitstable men now deal in the commoner kinds of oysters in order to obtain a profitable trade. As affording means of comparison, it may be here stated that the price at Whitstable for a bushel of natives in the year 1855 was 49*s.*; ten years afterwards it had increased by 41*s.*; and now, after another ten years have elapsed, the cost has advanced to £14 per bushel, and the public naturally enough wonder why. The reason for the scarcity, however, and the consequent high price of oysters is not far to seek. It may be illustrated by the old saying that "we cannot both eat our cake and have our cake." We have so overeaten our oysters, have so broken in upon the capital, that the supply has decreased, chiefly from the lack of breeding stock. The oyster being an animal of fixed habits cannot elude its enemies, and its enemies, chief of whom is man, are quick to find it, and when it is found we know too well what is sure to happen. Whenever a new oyster bed is discovered there comes all at once such a run upon it that it is at once "dredged to death." Every shell is remorselessly scooped out of the water and sent to market, prices for even the commonest sorts of oysters being too tempting to be resisted. Despite the fact that we ever and anon hear of the discovery of a new oyster bed, the prices continue to rise; and notwithstanding that we have begun to import largely both from France and America, oysters appear

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to be as scarce this season as they were last year.

So much has been written of late about the oyster, and so many theories have been recently propounded for making it again plentiful, that the public had begun to hope for the return of old times, and once more expected their favourite repast at the former price of 1*s.* per dozen! Oyster-culture *à la Françaïs* was the medium which was to enrich our oyster beds. The French, we were told, had discovered a method of indefinitely increasing their oyster supplies. "We have only to do as the French do, and we may at one fell swoop double or treble our produce." Such, three or four years ago, was the *mot d'ordre.* For a time this kind of pisciculture became the rage, and we were told that, if we only waited a little longer, the English coasts would become as rich in oysters as the coasts of La Belle France. Well, we have waited, and what is the result? This, namely, that we are now paying a higher price for our natives than before the rage for oyster-culture came upon us. It seems to have been forgotten that we already cultivated our oysters in England. The Bay of Whitstable has long been given up to oyster cultivation. There we find one of the most prominent organizations for the supply of oysters that there is in England. It has existed for a long period, and has been throughout signally prosperous. It is not at all difficult to describe what is done at Whitstable. They do not at that place breed the natives in which they deal; they receive the oyster brood of other places and grow it on their rich feeding grounds till it is ready for market. On the opposite shore of Essex "they can grow oysters, but they cannot feed them." At Whitstable, as we were recently informed by one of the freemen of the company, they can "feed them, but cannot breed them." The work, therefore, which is carried on at Whitstable is the feeding of oysters for the London and other markets. The Corporation of Whitstable will buy any quantity of brood from anybody who has it for sale. "Brood," or "ware," it may be stated, is represented by oysterlings of about the size of a threepenny piece. The authorities at Whitstable will give a fair price for ware, and when they get it they will lay it down on their feeding grounds, "they will nourish it and cherish it," for four years, and then, as the old song says, they will send to market "the finest native oysters that ever you did buy?"

It may interest the general public to know the changes undergone by spat before it is brought to market in the shape of well-flavoured natives. Our readers may have been informed that the oyster yields its young in literal millions. They must not believe that; but that the animal is a prolific one as regards production we think is certain. We shall not at present pause to inquire whether or not each pair of shells encloses a male and female. Some naturalists say that it is so; but the first great fact that comes home to us is that the infantile mollusc requires a holding-on place. If the tiny creature cannot anchor itself to some coign of vantage it is lost for ever—swept away by the ravening waves of the sea. It has been calculated, with probably some exactitude, that the oyster grows as follows, and it is on this basis that the Whitstable Company exists and flourishes:—At the first blush of life it requires 25,000 oysters to fill a bushel measure. In the second year, however, the animal has so grown that 6,400 individuals will occupy a similar space. In the third year the molluscs have still further increased in bulk, and only 2,400 are then required to fill each bushel; and in the fourth year, when the oyster may be held to have thoroughly ripened and to be ready for market, the measure in question will only hold 1,600 oysters. Supposing, then, that the Whitstable Company purchase a bushel of oysters in the first year of their growth at about £14, what will be the amount of profit the Corporation will derive from the venture four years afterwards? It must, we think, prove rather considerable. The reader can take the 1,600 in 25,000 and calculate the result. There occurs, of course, considerable mortality, but it will not be more in a careful nursery than a twentieth part of the whole.

It has been wisely decreed that there must be a close time for oysters, and the habits of the

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animal being pretty well known to naturalists, it was not difficult to hit upon the months during which the scalps should be allowed to rest. If we could hit with similar precision on a close time for our sea fish, the supplies might, in time, be considerably augmented; but it is remarkable that it is only when some kinds of fish are about to spawn that we can obtain them. The herring may be instanced as one of the fishes that we only procure when it is least fitted for the food of mankind. Unfortunately, the close time for oysters is not so well observed as it ought to be, seeing that we can obtain them all the year round in London and other populous cities. It is that fact which helps to decrease the supplies, and were it not that there is a large number of proprietary beds held by companies and individuals, the animal would probably before this have become extinct. There is still a wonderfully large amount of commerce in oysters, and if we were to be specially favoured with a prolific spawning season, the future supply would become more assured than it is at present. It must not, however, be forgotten that an oyster requires a period of four years to arrive at maturity, and that, if a fall of spat occurred next summer, the oysters derivable from such fall would not be marketable till the year 1880. That even the most populous natural oyster scalps are vulnerable and easily affected is well known to experts. The Edinburgh beds at Newhaven, which are of great extent, were some years ago so despoiled as to be in danger of rapidly becoming barren. The beds in question belonged to the corporation, but were worked for the benefit of the fishermen of Newhaven, who paid a nominal rent for the privilege. The Newhaven men were also lessees, at a trifling annual sum, of the oyster beds belonging to the Duke of Buccleuch; but his Grace, on being informed that the men were spoliating the scalps, or, in other words, were selling enormous quantities or small oysters that had never had an opportunity of spawning, to English and foreign oyster fatteners, re-let the beds to a more cautious tenant, who is working them in a different fashion from the Newhaven fishermen. The scalps belonging to the City of Edinburgh could not very well be taken from the Newhaven men, but on a new lease being granted, they were bound not to sell the small oysters; and now, we believe, there is a chance, although oysters are still very scarce at Edinburgh, that the beds will ultimately recover their former prosperity. The Firth of Forth is, in a sense, one vast oyster-bed, the scalps, more or less thickly populated, extending from Queensferry to Prestonpans, the home of "the whiskered pandour," a distance of about 20 miles. It was calculated a few years ago that the scalps which the Newhaven men had the right of dredging yielded about £10,000 per annum. But that fine revenue soon dwindled away when the men began to send the seed oysters in hogsheads, day after day, to Hamburg, Ostend, and Whitstable. Thirty years ago 100 of the fine Firth of Forth oysters could be bought in the Edinburgh market for less than 1s. It is fortunate that the system of private layings has considerably extended, although we believe the right of laying down oyster-beds is not so largely taken advantage of as it might be. Recent legislation has also aided in the preservation of our oyster fisheries, but there is still a great deal to be done in the way of extending the supplies and of working and cleaning the beds, so as to destroy as many of the numerous enemies which prey on the oyster as possible. As showing the magnitude of the demand for oysters, it may be mentioned that from the natural beds of the Wash as many as 700,000 sizeable oysters had been lifted in three months.

Many of the French natural oyster scalps which are now almost, if not quite, barren, were at one time exceedingly productive; but in time, as opportunities of quick transport extended, they also were overdredged, till in some cases an insufficient breeding stock was left, which, coupled with an occasional intermission in the fall of spat, speedily rendered the oyster a scarce commodity in France. Artificial breeding has in some degree restored the oyster to the French, but it is questionable if the mollusc is produced in such large numbers as is represented. A portion of the English

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oyster supply is now, however, derived from France, and the import from America is increasing, large quantities being received every week in Liverpool, Glasgow, and elsewhere. We need them all.

Other kinds of shell-fish are becoming as scarce as the oyster. Shrimps and prawns, notwithstanding the ceaseless industry which purveys them for the markets of our great cities, are becoming less plentiful year by year. As for our mussel supply, it is likely to cease altogether in a few years for want of spat to populate the scalps. The unceasing demand on our mussel beds for bait is sure in time to affect the supplies. As many as 4,452 tons of mussels have been obtained this season from the fisheries at Lynn. Each ton of mussels, it may be noted, is of the value of about £1 sterling at first cost. This shell-fish, as well as being used for bait in the hand-line cod and haddock fishery, is extensively made use of instead of oysters for sauce, for which purpose it is excellent, when in proper season. With regard to the whelk fishery, it would be well if it were conducted with greater care. The men will find out some day the truth of the old adage about wilful waste bringing wilful want. The greed of our fishermen is at present so great that they seize upon all the sea produce they can obtain, no matter whether it be ripe for food or not. It is a misfortune of the whelk fishery that the small ones are captured as well as the larger ones, and ruthlessly sent to market. They might as easily be restored to the waters and allowed to grow for a few months longer—above all, be permitted, at least once, to reproduce their kind. What is done in the shrimp fishery at some places might be done with the whelks—they could be passed through a sieve, and only those of a certain size be selected for use. From some inquiries made by one of Her Majesty's Inspectors of Fisheries (Mr. Buckland) we find that the yearly value of the whelk fisheries must be very considerable, those of Lynn and its neighbourhood being set down as being worth £6,000 per annum. It would not be too large a sum if we were to set down £250,000 as the produce of what may be called our minor shell-fish fisheries. As to lobsters, it may be stated, without fear of contradiction, that they have become of late more and more difficult to obtain; and, as the public may now judge for themselves, those now brought to market are several sizes smaller than the lobsters of 10 or 12 years ago. Why so, will be asked? The answer is simple. All the fine old lobsters have long since been devoured; we have eaten them down to the present size, and in all probability we shall stop eating them down *only* when they come to the vanishing point. At one period, say 12 years ago, the more Northern Scotish seas abounded with gigantic specimens of these favourite crustaceans, and vast numbers of them were annually sent to southern markets in perforated boxes, or packed in seaweed. Now, as we were recently informed, on the West Coast of Scotland these giants of their race have been exterminated, and recourse is being had to such as can be captured, no matter what may be their size.

In conclusion, whatever opinions may be held as to whether our supplies of round and flat fish are increasing, remaining stationary, or diminishing, it is certain as regards lobsters and other shell-fish that the supplies are falling off, and that the size of many of them is in process of annual diminution. An intelligent Edinburgh fish merchant is of opinion that, if some remedy is not speedily provided, there will not, at the expiration of another five years, be any lobsters worth bringing to market. These animals, being caught in cages or pots can be handled with facility, so that those of improper size might easily be rejected, as also those in berry. At that time they ought not to be captured. It is the misfortune of sea fisheries of every kind that they are free to all. Each man who fits out a vessel fights for his own hand, feeling that if he were to reject a fish from its being undersized, or in an unfit state for table purposes, his neighbour would at once capture it. Whatever its condition, it will realize a price of some kind—it will fetch money in the market-place—and that is the philosophy which at present governs our fisheries.—*Times*, 21st March 1876.

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